NOVEMBER 17, 1934

Railway Age

Founded In 1856

One for All...

And All for One

THE Administration, the public, the railroads and the durable goods industries have one common aim — increased business.

Stimulation of the durable goods industries is essential to business recovery.

Railway purchases present the quickest and one of the most important avenues of stimulating the durable goods industries.

To increase railway purchases, railway earnings must be increased.

It is apparent, therefore, that the Administration, the public, the railroads and the durable goods industries in their endeavor to bring about business recovery should cooperate in securing legislation and regulation which will enable the railways to *earn more* and to *buy more*.

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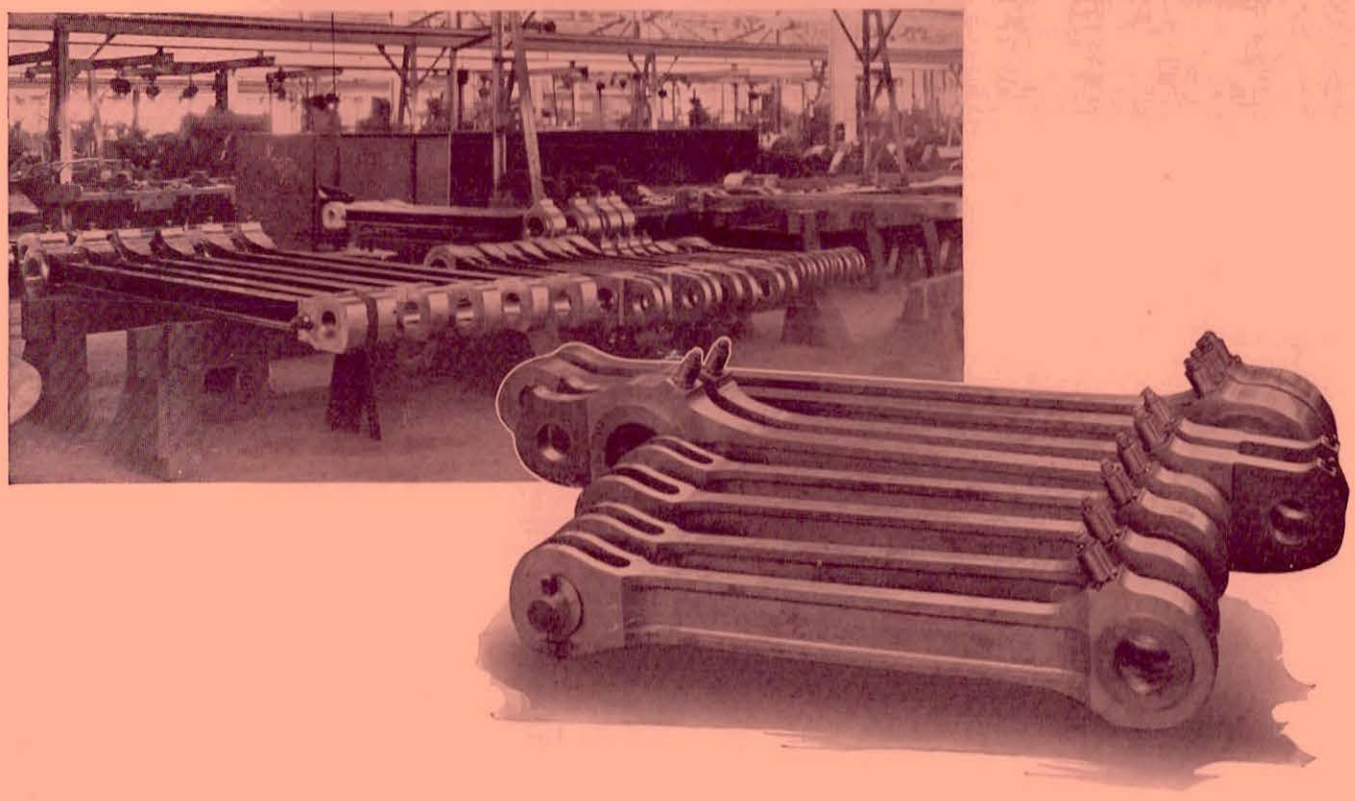

HIGH QUALITY –

is essential for true economy when purchasing vital locomotive parts such as connecting rods.

Their true cost must be measured in terms of the miles of satisfactory service delivered—in freedom from road delays and expensive detention in shops.

Even from the point of view of first cost we can offer competitive prices for high quality in materials and workmanship.

May we not quote on your requirements for connecting rods?

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879.

A major cost of railroad operation is in moving dead weight and empty cars. Now come USS High Tensile Steels with a practical solution to this problem of excessive weight. Costly dead weight is converted into increased capacity for payload at no increase in operating costs.

USS COR-TEN, one of this group of modern steels, is a low chromium copper silicon steel of high tensile strength and with an atmospheric corrosion resistance conservatively estimated at four to six times that of ordinary open-hearth steels. USS COR-TEN not only insures lighter and stronger construction, but greatly increased life as well.

USS High Tensile Steels are available in plates, shapes, bars, strips, sheets, rods, wire and wire products, pipe and tubular products. Forming and fabricating involves no radical changes in plant facilities or methods. Nor is it necessary for builders of railroad cars, traction cars, buses and trucks to experiment or tamper with the important factors of strength and safety which have always characterized American Construction.

Literature will be mailed upon request.

UNITED STATES STEEL CORPORATION SUBSIDIARIES

AMERICAN SHEET AND TIN PLATE COMPANY, *Pittsburgh* TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
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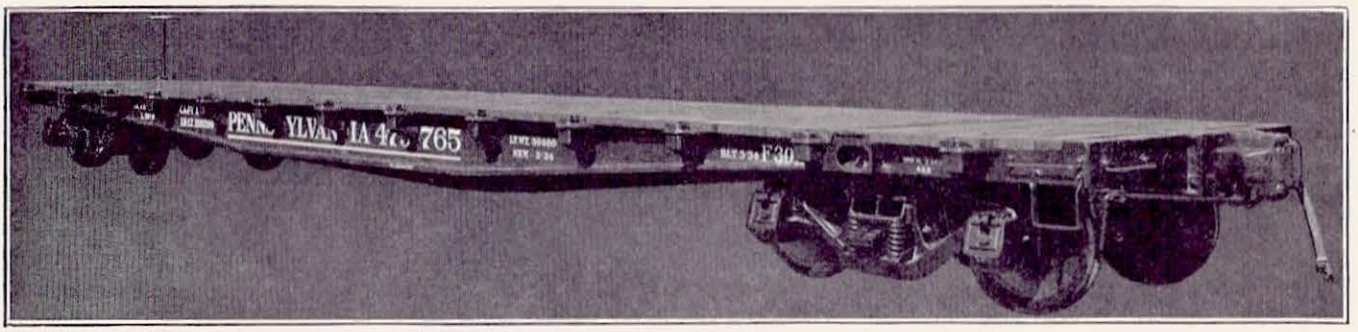
Pacific Coast Distributors—COLUMBIA STEEL COMPANY, San Francisco, Calif. • *Export Distributors*—UNITED STATES STEEL PRODUCTS COMPANY, New York, N.Y.

A Great Forward Step

1500 FLAT CARS

of greatly improved design with



50 FT. LONG—70. TON CAPACITY

LIGHTER IN WEIGHT

•

MUCH STRONGER CONSTRUCTION

•

RESISTS CORROSION

•

MINIMUM HEIGHT FROM RAIL
TO TOP OF FLOORING

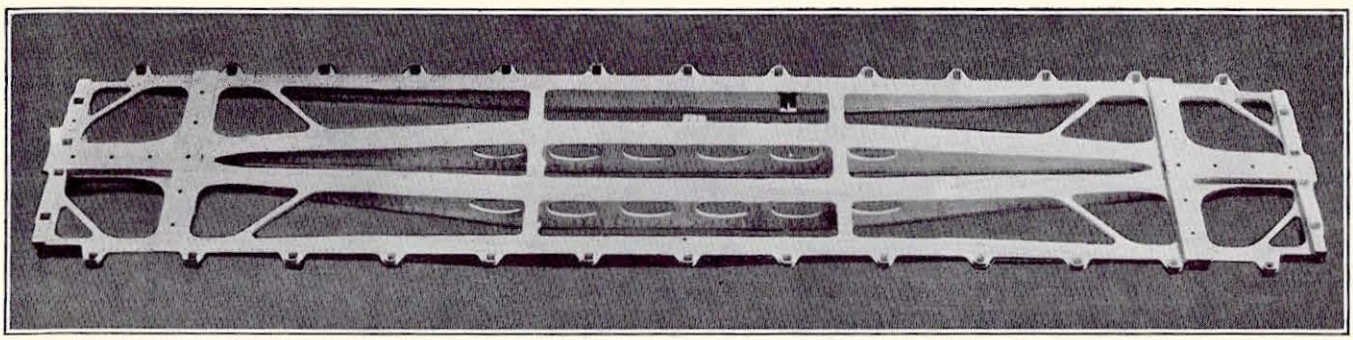
GENERAL STEEL CAST

EDDYSTONE, PA. COMMONWEALTH

in Car Construction

NOW BEING BUILT

COMMONWEALTH *Cast Steel Underframes*



CAST STEEL ONE-PIECE UNDERFRAME

ENTIRE UNDERFRAME IN ONE STRONG UNIT, ELIMINATING MANY SEPARATE PARTS AND THOUSANDS OF RIVETS

•

ELIMINATES UNDERFRAME MAINTENANCE AND ASSURES MAXIMUM LIFE AND SERVICEABILITY OF CAR

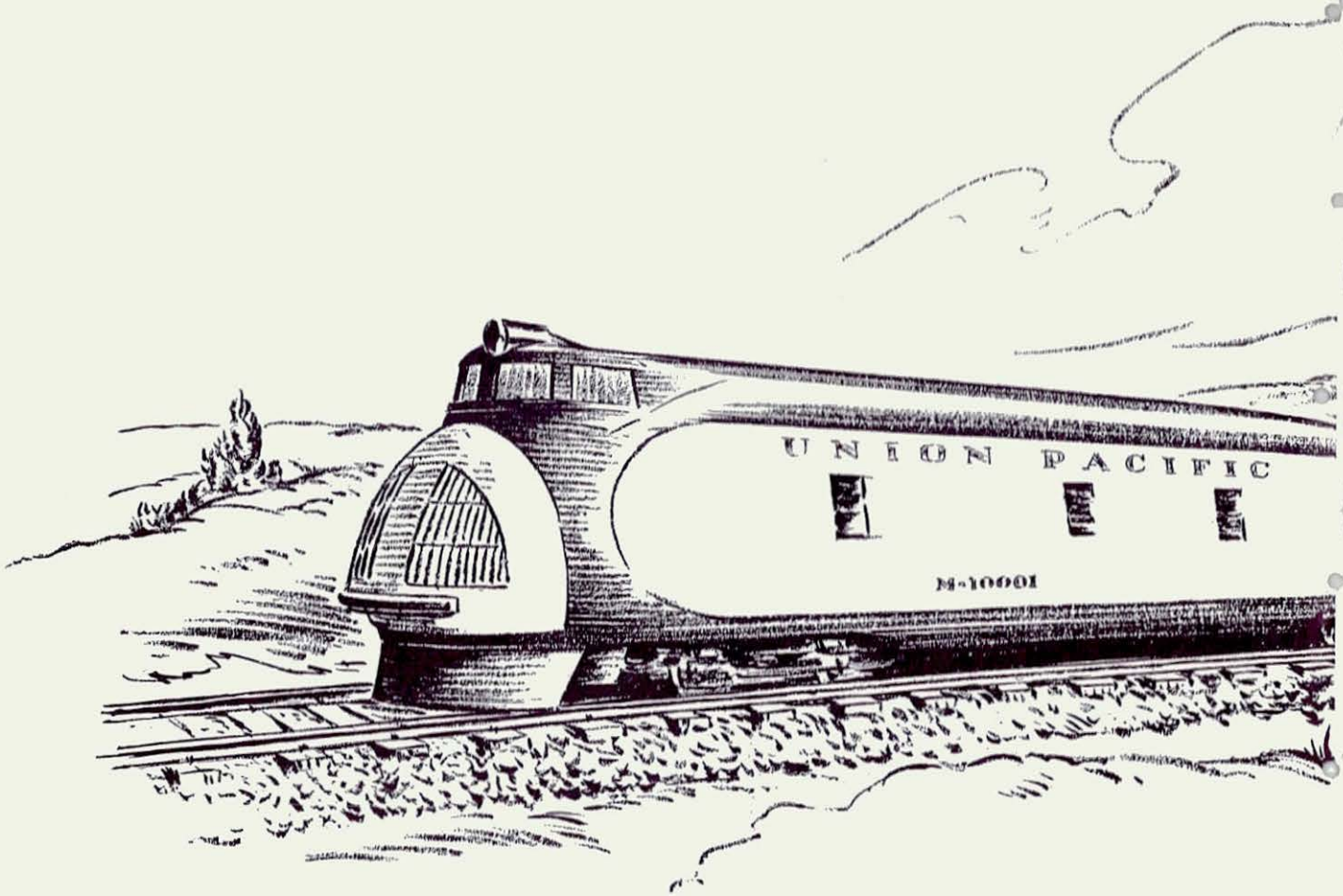
•

CAST STEEL ONE-PIECE UNDERFRAMES PROVIDE THE BEST CONSTRUCTION OBTAINABLE FOR ALL TYPES OF FREIGHT CARS

INGS CORPORATION

PRODUCTS

GRANITE CITY, ILL.



SUSTAINED SPEEDS— Across Plains —accomplished with

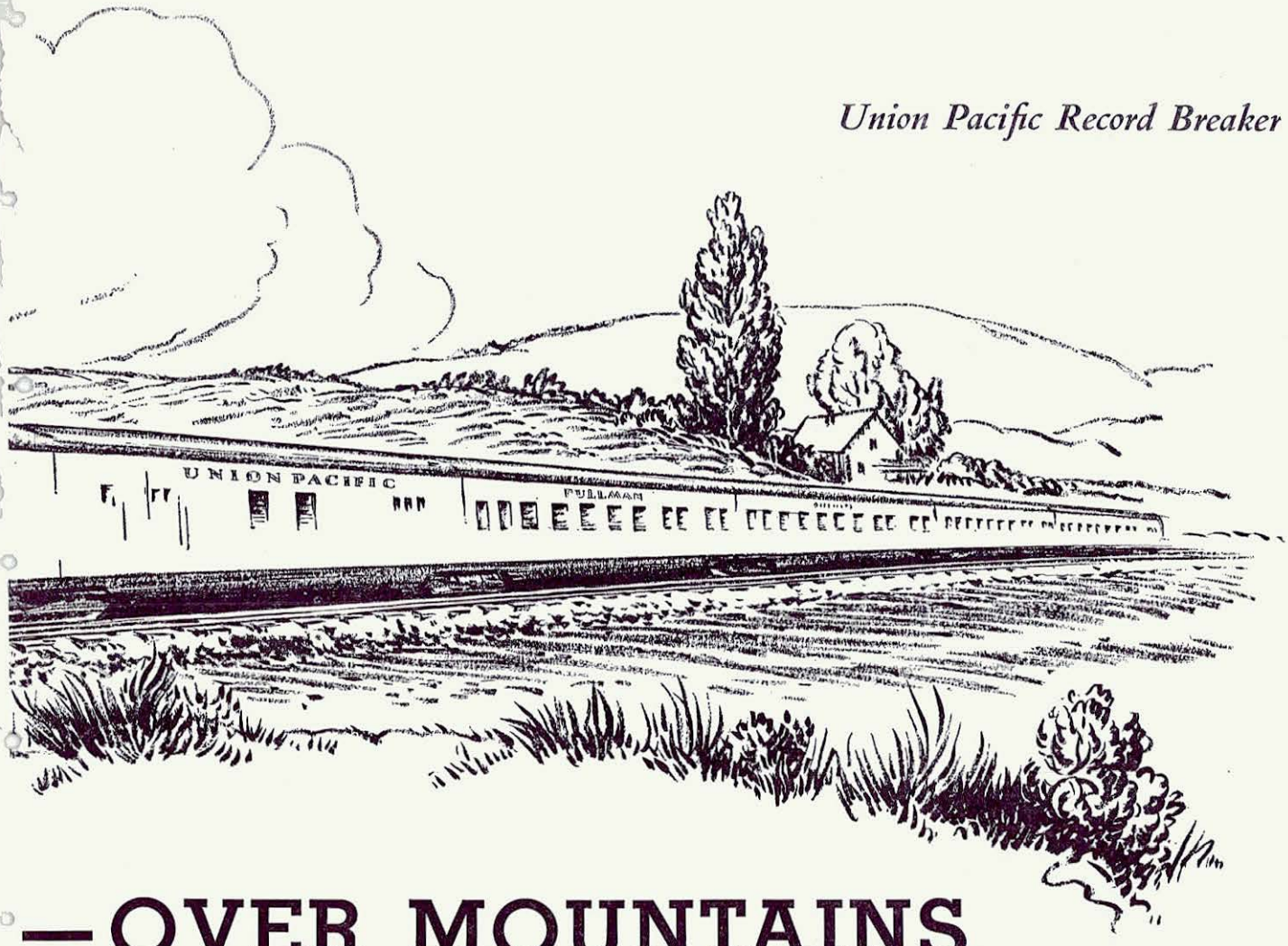
WHEN the new 6-car Union Pacific Streamliner pulled into New York City the other day—56 hours and 55 minutes from Los Angeles—it held practically every speed record for rail transportation. It demonstrated the ability of high-speed rail motor cars to operate in every section of the country, under all conditions. It demonstrated the ability of such a train to make faster schedules than those now required of any train—anywhere.

Most important, these new trains are revenue builders. Thousands of people saw them at A Century of Progress Exposition. Thousands of people watched this U. P. train streak across the country. Thousands of people are awaiting the opportunity to ride on such a train.

Railroad officials realize the revenue-building benefits of these trains and the saving in operation costs. What plans are you making for **your** railroad?

GENERAL

Union Pacific Record Breaker



—OVER MOUNTAINS
Through Large Cities
GENERAL ELECTRIC DRIVE

The successful performance of high-speed rail-motor-car trains depends upon the reliability of the motive power. General Electric drive—G-E motors, control, generators, and air compressors—will give you dependable service—smooth and efficient power at the wheels that means thoroughly satisfactory operation. The new 6-car 900-hp. Union Pacific revenue builder uses G-E drive.

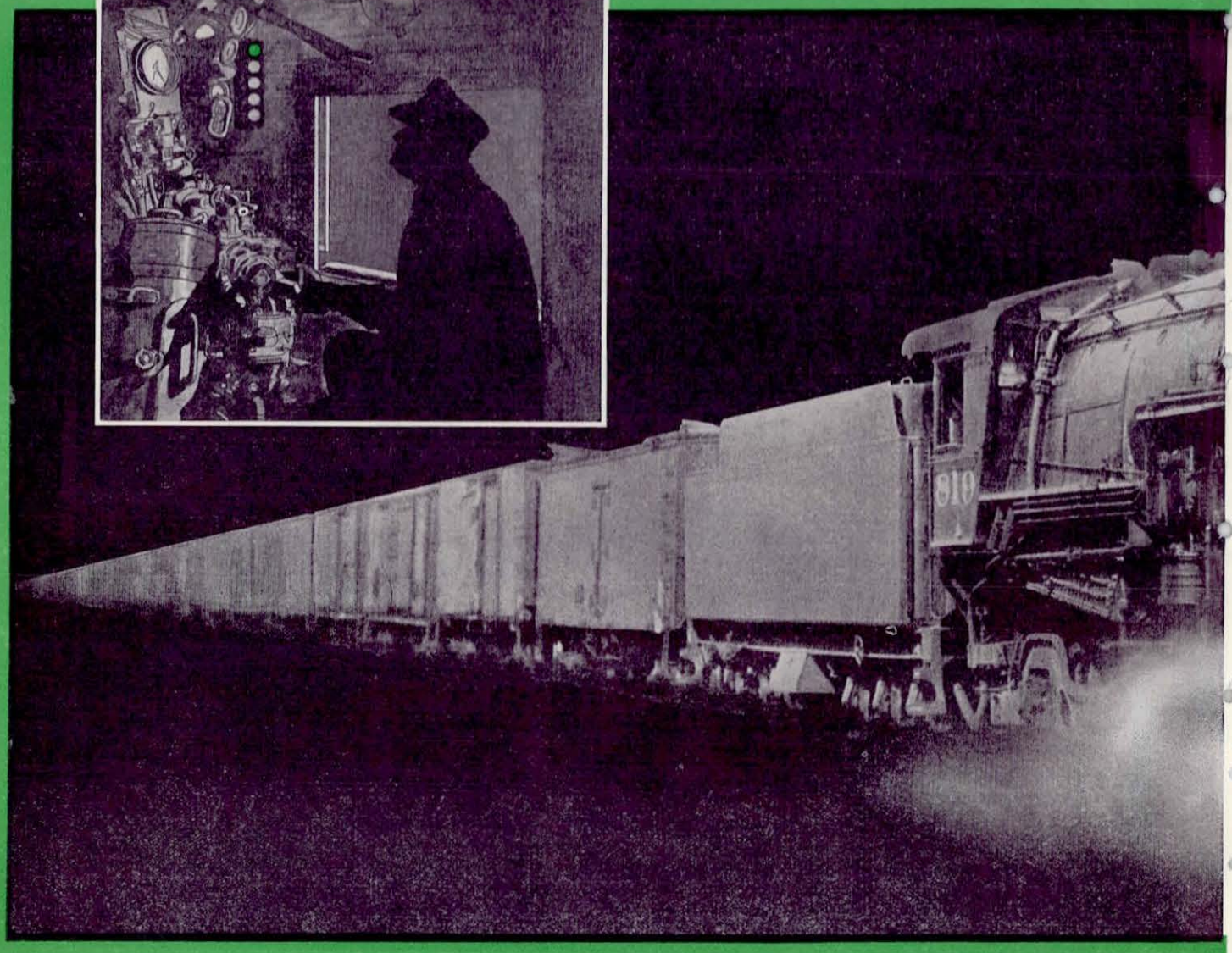
Officials have found that all types of rail motor cars, for through and local service, pay large dividends on the investment. Their use results in savings in operation often as great as 50 per cent; they give dependable service; they have a high availability and a long life.

Today, rail motor cars with electric drive are an essential type of motive power; there are more than 700 cars in service, operating on 53 Class I railroads. Of these cars, more than two-thirds are G-E equipped. General Electric, Schenectady, N. Y.

255-9

E L E C T R I C

G-R-S Cab Signals Rel



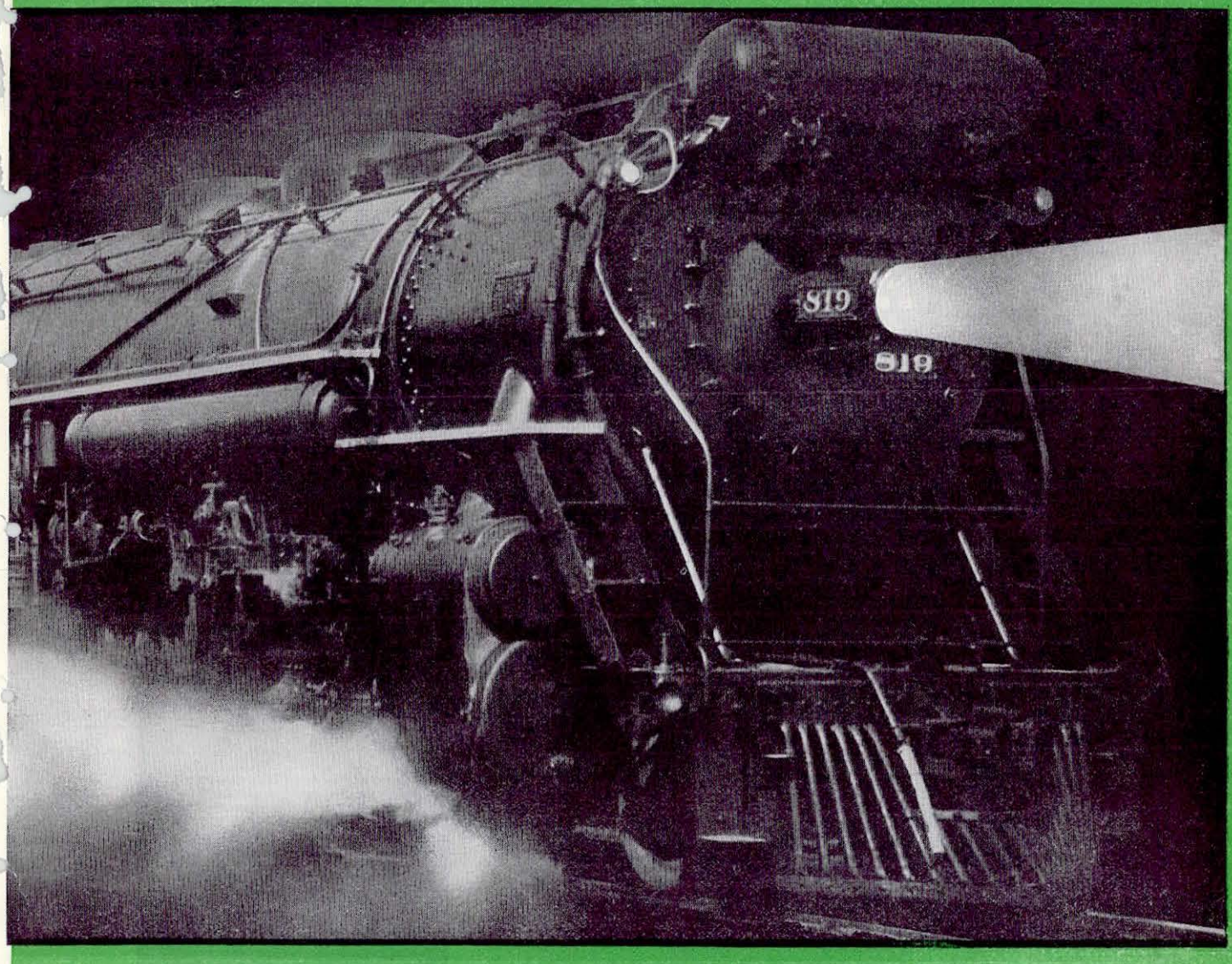
G-R-S Cab Signals relieve traffic congestion because they enable trains to keep moving and to close up at low speed on restrictive indication in accordance with Standard Code Rule 290 as recommended by the A. R. A. Signal Section.

When a train is running on the low-speed indication, and block indications ahead become proper for higher speed, the cab signal instantly displays a proceed indication, and the engineman immediately increases speed accordingly. All trains in the congested territory advance in the same manner.

GENERAL RAILWAY

New York Chicago ROCHESTER,
Montreal London Paris Tokyo

ieve Traffic Congestion



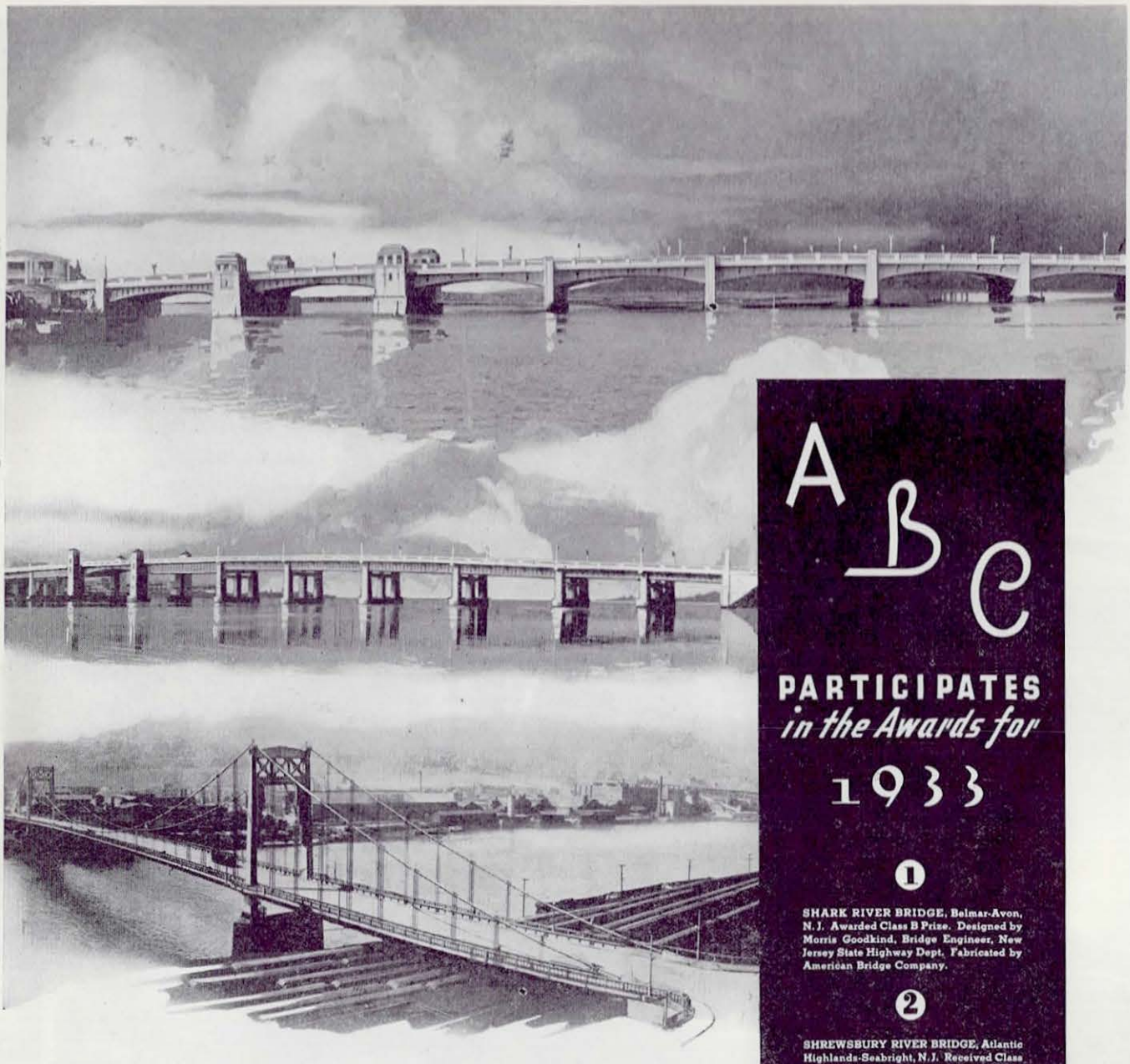
G-R-S Cab Signals afford the utmost facility, flexibility and safety of operation because they give the engineman up-to-the-second information of track and block conditions ahead, regardless of weather conditions. They are, therefore, ideally adapted to the requirements of modern high-speed traffic.

G-R-S Cab Signals would greatly help traffic on your congested lines. Our nearest office will gladly give you the necessary information.

SIGNAL COMPANY

NEW YORK St. Louis A-1244

Madrid Melbourne Calcutta Buenos Aires



A B C

PARTICIPATES *in the Awards for* 1933

1

SHARK RIVER BRIDGE, Belmar-Avon, N. J. Awarded Class B Prize. Designed by Morris Goodkind, Bridge Engineer, New Jersey State Highway Dept. Fabricated by American Bridge Company.

2

SHREWSBURY RIVER BRIDGE, Atlantic Highlands-Seabright, N. J. Received Class B Honorable Mention . . . Designed by Morris Goodkind, New Jersey State Highway Dept. . . . Fabricated and erected by American Bridge Company.

3

SOUTH TENTH STREET BRIDGE, Pittsburgh, Pa. Received Class A Honorable Mention. Designed by Geo. Richardson, Bridge Engineer, under direction of then Chief Engineer, V. R. Covell, Dept. Public Works, Allegheny County. Fabricated and erected by American Bridge Company.

THE three bridges here shown were adjudged meritorious by the jury of the American Institute of Steel Construction appointed to name "the most beautiful bridges of steel opened to traffic in 1933." One was awarded the prize for Class B—bridges costing more than a quarter million and less than a million dollars. The other two received honorable mention in Classes A and B—Class A being made up of bridges that cost more than a million dollars.

* * * * *

"When beauty can be added to strength and permanency—then designer and architect have created in the bridge or other structure a justifiable object for community pride in the completed work."

AMERICAN BRIDGE COMPANY

US STEEL

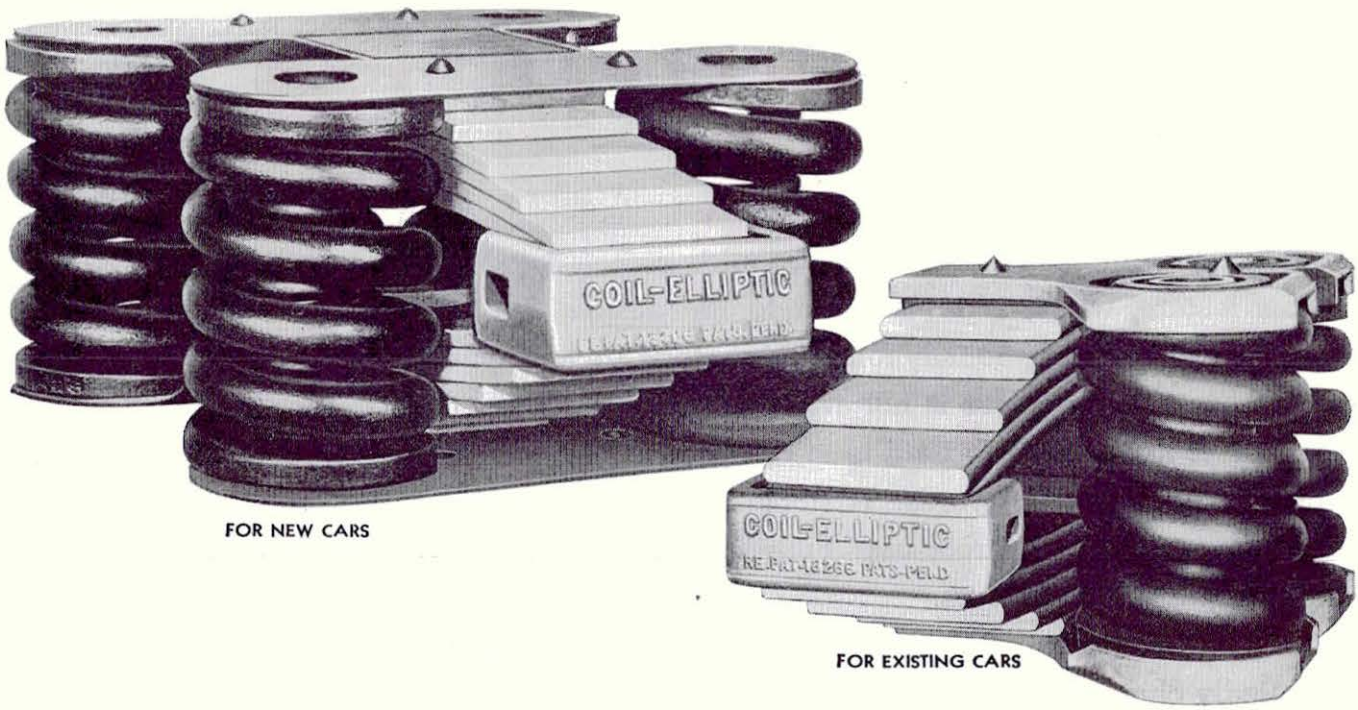
SUBSIDIARY OF UNITED STATES STEEL CORPORATION

General Office: Frick Building, Pittsburgh, Pennsylvania

Contracting Offices: Baltimore, Boston, Chicago, Cincinnati, Cleveland, Denver, Detroit, Duluth, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Salt Lake City.

Pacific Coast Distributors: Columbia Steel Co., San Francisco, Calif. *Export Distributors:* United States Steel Products Co., New York, N. Y.

"COIL-ELLIPTIC" SPRING GROUPS Control The Bumps



FOR NEW CARS

FOR EXISTING CARS

Friction between the leaves of the elliptic springs counteract and soften the violent oscillations of the coil springs.

Freight cars equipped with "COIL-ELLIPTIC" spring groups are relieved from injurious vertical shocks and carry their lading safely at all speeds.

Our spring shop provided with modern facilities for the double heat treatment of springs to meet the new A. R. A. specifications, assures a quality product and a dependable source of supply.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

THE HOLDOVER TANK STORES COLD

For unusual runs, the Pullman Air Conditioning System can provide a Holdover Tank . . . supplying a storage of cooling liquid for use in the coils of the conditioning unit.

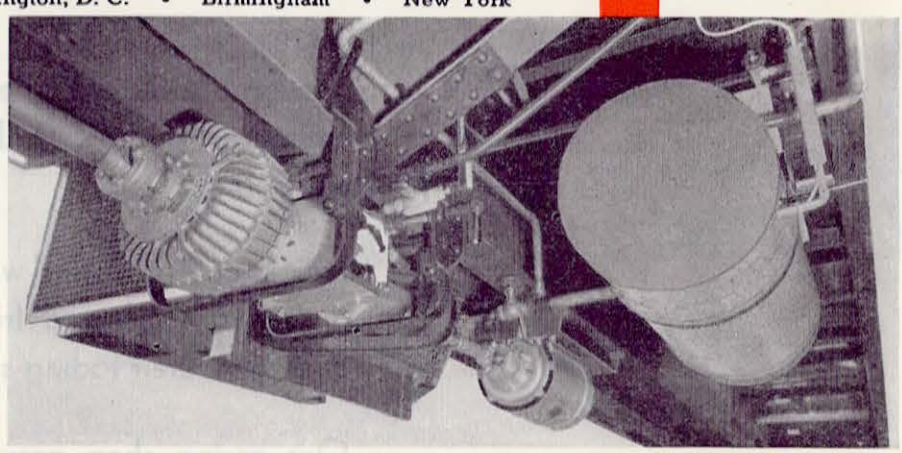
This feature, which is in addition to the standby motor, is furnished where exceptionally long station stops are encountered and where outside power is not available. The Holdover tank liquid is cooled while the train is in operation or from standby motor operation in the yards. A storage, not of power but of *cold,* is provided for direct use. Fully charging the Holdover tank requires but two hours.

The Holdover feature requires little maintenance and can be repeatedly charged and discharged with no detrimental effects.

PULLMAN CAR & MANUFACTURING CORPORATION

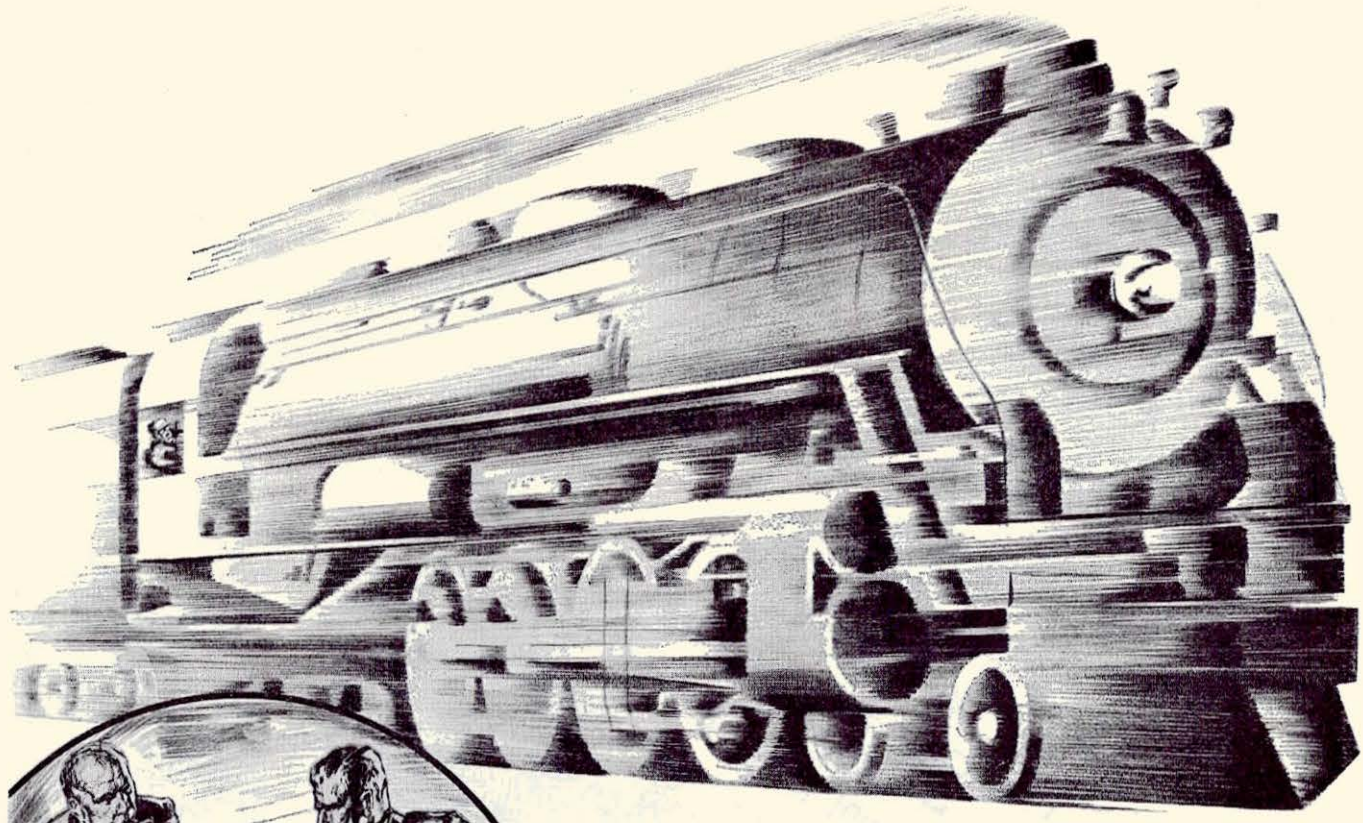
Chicago • San Francisco • Washington, D. C. • Birmingham • New York

● The compressor freezes ice out of the non-corrosive, non-poisonous solution in the Holdover Tank and forms horizontal ice columns, closely spaced. For Holdover cooling, a pump circulates the cold liquid through a coil in the conditioning unit.



PULLMAN

DIRECT DRIVE **AIR CONDITIONING SYSTEM**



READY FOR ANY SPEEDS

WHENEVER men discuss railroading in these days, sooner or later they come around to the subject of high-speed trains.

Whether faster schedules are accomplished by speeding up more or less conventional equipment or by the adoption of radical innovations, there's one thing certain—you can't go wrong using Bethlehem Heat-Treated Wrought-Steel Wheels.

These wheels have proved their stamina in carrying, day in and day out, the heavy equipment of many of the country's fast passenger trains. And they were selected to carry the Burlington Zephyr as it streaks rocket-like over the rails.

The forging and rolling operations of manufacture so refine the steel as to make Bethlehem Heat-Treated Wrought-Steel Wheels utterly dependable. And the heat-treatment of the rim gives them an armor that defies wear.

Whatever speeds, whatever types of equipment the future may bring, you can depend on Bethlehem Heat-Treated Wrought-Steel Wheels for safety and low cost of wheel maintenance.

BETHLEHEM WROUGHT-STEEL WHEELS

BETHLEHEM STEEL COMPANY General Offices: Bethlehem, Pa.

Over 1500 Cars

One of 60 Sturtevant Railway Air Conditioning Units recently ordered by a leading American railroad

WHY are so many cars Sturtevant-equipped? Check these advantages ...see for yourself!

17 railroad systems are now operating passenger cars equipped with Sturtevant fans and cooling coils, individually or in combination. There are over 1500 of these Sturtevant-equipped cars...a large percentage of all passenger cars already air conditioned.

Why? We believe it is because any railroad can install Sturtevant Air Conditioning Equipment with full confidence that it will provide the utmost of effective, economical, trustworthy service.

In this equipment you get the benefit of: 1. Sturtevant's 70 years of air engineering experience.

2. Sturtevant's 20 years of experience as the pioneer in complete comfort conditioning. 3. Service-tested design. 4. Proved performance.

May we send further information?

★

B. F. STURTEVANT COMPANY

Main Offices: Hyde Park, Boston, Mass.

Chicago, Ill., 400 N. Michigan Ave.; San Francisco, Cal., 681 Market St. *Branch Offices in Other Cities*

PIONEERS IN AIR CONDITIONING FOR OVER 20 YEARS

is proving it can stand up against Coal-Corrosion

● For three years, Illinois, West Virginia and Pennsylvania Bituminous has been left in these Alcoa Aluminum hopper bins, exposed to rain, snow, 365-day-a-year weather.

No evidence of corrosion is as yet noticeable. That is a test that means something!

For over three years, 70-ton hopper cars exactly like the one illustrated have been hauling coal intermittently. No evidence of corrosion is as yet noticeable. That test means something!

Two Class I railroads have experimental Alcoa Aluminum hopper cars in operation, with the same sort of results. One of these roads has several more under consideration, as a result of their observations. That means something!

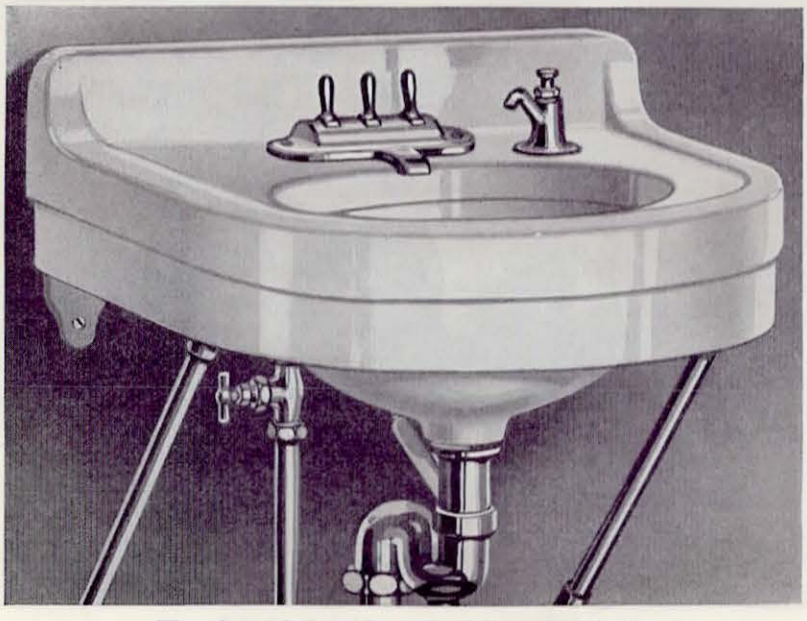
An important observation has been that hoppers of Alcoa Aluminum dump cleaner. A certain conclusion is that hoppers of Alcoa Aluminum do stand punishment. And an important fact is that such cars weigh as much as 10 tons less.

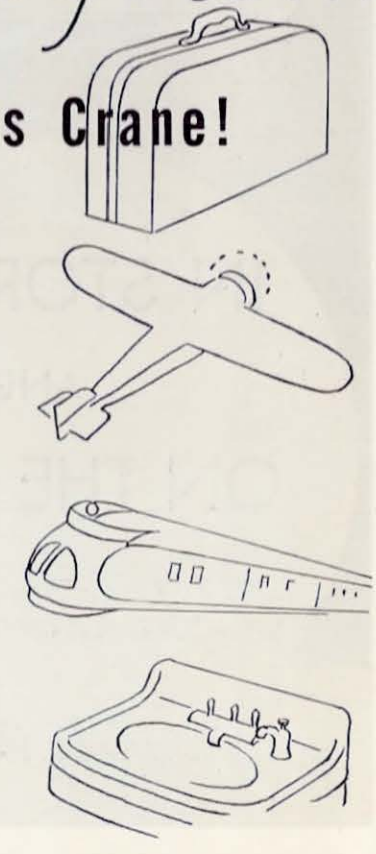
All these facts mean that Alcoa Aluminum hopper cars are inevitable. Our engineering cooperation is offered any railroad executive who wishes to start his own development. All the corrosion-resisting advantages of Alcoa Aluminum construction may be achieved by replacing side- and hopper-sheets with Alcoa Aluminum,... now. For details, address ALUMINUM COMPANY OF AMERICA, 1878 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA · ALUMINUM

EVERYTHING IN TRAVEL IS *Lightweight*...

why not China lavatories, too, asks Crane!



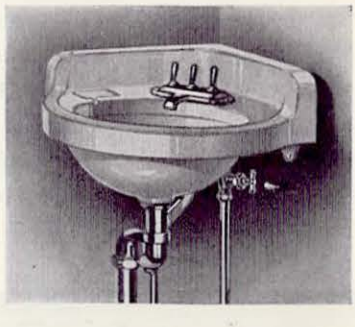


This Crane lightweight railroad lavatory RR 108-A, 18x15¼ inches, weighs only 32 pounds without trimmings.

Everything is being sheared of *excess* weight . . . baggage, planes, streamline trains. Very little weight goes along just for the ride nowadays! It's perfectly natural, then, that Crane should — with characteristic versatility — produce a new *lightweight* lavatory to match the trim, sleek, lightness of modern day coach, sleeping car and private coach.

Vitreous china always has provided durable and lasting beauty in a lavatory plumbing fixture. Crane designers said: "We'll produce an identical *lightweight* vitreous china fixture—with the same smooth, glossy beauty that people are accustomed to in lavatory fixtures for their homes, clubs and smart hotels." And they did . . . the Railroad Lightweight Vitreous China Lavatory!

This trim modern lavatory is easy to clean, has the same permanent beauty and sanitation as ordinary vitreous china lavatories. It has a splash rim, hot and cold water supply and pop-up waste fixture with lever handle self-closing valves and push-button liquid soap dispenser. It is furnished in white or in color, to match the decorative treatment of modern lightweight train interiors. The Crane line of vitreous china lavatories for railroads is complete. Write for your copy of Circular AD78.



Crane lightweight railroad corner lavatory RR110-A, 12x12 inches, weighs only 16 pounds without trimmings.

CRANE *Lightweight* LAVATORIES

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILL. NEW YORK: 23 W. 44TH ST.

Branches and Sales Offices in One Hundred and Sixty Cities

● Pioneers in steel car construction, the Pressed Steel Car Company now presents a new light-weight Hopper Car which merits the attention of every railroad official interested in cutting costs. Through the application of USS COR-TEN, the new high-tensile, corrosion-resisting steel, a new alloy cast steel for such parts as truck side frames and bolsters, and the redesign of car parts to utilize the superior physical properties of these new materials, the reduction in dead weight truly presents amazing possibilities of cost reduction. The ratio of pay-load to dead weight has been increased to 4.63 to 1. This has been accomplished by adhering to sound engineering principles and conservative values, and the car is in no way a radical departure from time-tested construction.

Our engineers welcome an opportunity to discuss the details of the new car with you—to demonstrate its outstanding advantages. Inspect the car at Chicago Union Station, Nov. 22 and 23, Track No. 4.

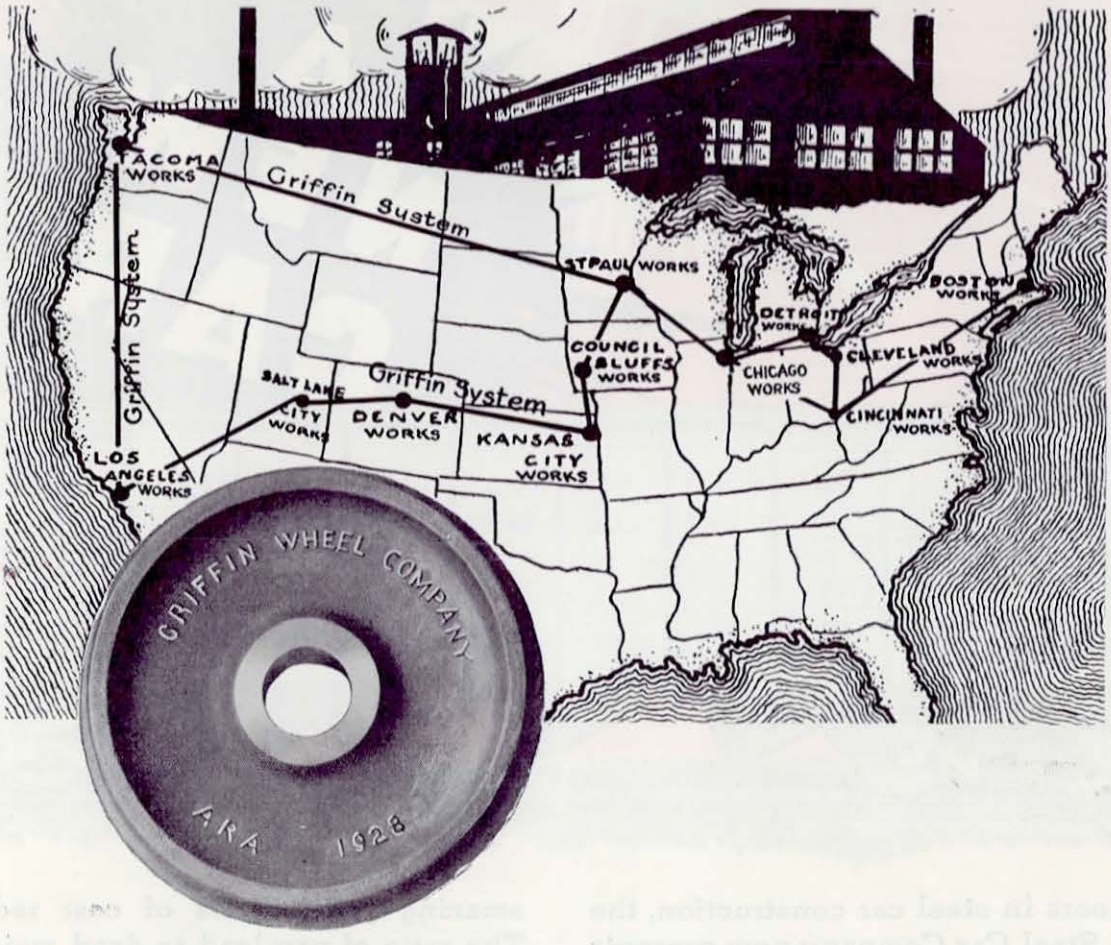
Literature on request.

PRESSED STEEL CAR COMPANY

PITTSBURGH • PENNSYLVANIA

GRIFFIN CHILLED TREAD WHEELS

MOST ECONOMICAL
MOST DURABLE
GREATEST SAFETY



12 PLANTS located in the principal railroad centers of the United States makes possible short hauls for both new and old wheels.

Prompt and efficient service always assured.

THE FOOD SUPPLY OF THE NATION IS CARRIED ON CHILLED TREAD WHEELS

GRIFFIN WHEEL COMPANY

410 NORTH MICHIGAN AVENUE CHICAGO, ILLINOIS

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Detroit	Cleveland	St. Paul	Council Bluffs	Salt Lake City	Tacoma

Published every Saturday by the Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa., with editorial and executive offices: 30 Church Street, New York, N. Y., and 105 West Adams Street, Chicago, Ill.

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The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.).

Subscriptions, including 52 regular weekly issues, payable in advance and postage free; United States and possessions, 1 year $6.00, 2 years $10.00; Canada, including duty, 1 year $8.00, 2 years $14.00; foreign countries, 1 year $8.00, 2 years $14.00.

Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 97 November 17, 1934 No. 20

NRA CODE GRAPHIC ARTS INDUSTRY

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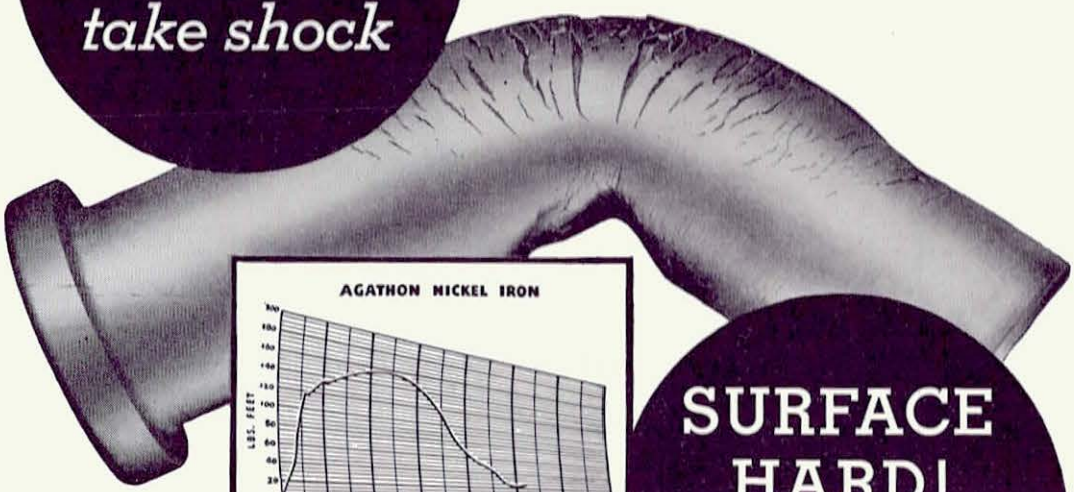
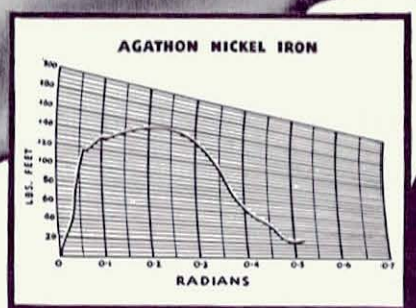
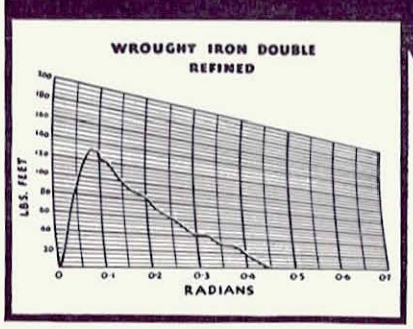
TOUGH! *to take shock*







SURFACE HARD! *to resist wear*

Shocks that break ordinary steel pins have no effect on the tough core of Agathon Nickel Iron. « « « Combined with this essential toughness is an ability to take a hard surface that gives Agathon Nickel Iron pins and bushings exceptional life. « « « How well Agathon Nickel Iron backs up a hard case with a tough core is shown by the above charts. « « « The Humphrey Machine which produced these charts, bends the full section to the breaking point of the case and then on to final rupture. The first break in the line indicates the point at which the case was first cracked; the rest of the curve shows the resistance of the core to rupture. « « « The core of the wrought iron shows rapidly diminishing resistance as the angle of bending increases. « « « Agathon Nickel Iron, on the other hand, shows stubborn resistance even after the case is broken. The core is tougher and uniform in composition. « « « Use Agathon Nickel Iron for all case-hardened parts.

Republic Double Strength Steel for Transportation Industry • Toncan Iron Boiler Tubes Pipe, Plates Culverts Rivets Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for Locomotive Parts • Agathon Engine Bolt Steel • Agathon Iron for pins and bushings • Agathon Staybolt Iron • Climax Steel Staybolts • Upson Bolts and Nuts • Track Material Maney Guard Rail Assemblies • Enduro Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel.

CENTRAL ALLOY DIVISION, MASSILLON, OHIO

REPUBLIC STEEL
CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

AGATHON NICKEL IRON

RAILWAY AGE

Production, Employment and the 30-Hour Week

No more important issue confronts the American people than that raised by the demand of organized labor for legislation to establish a 30-hour working week at the present pay for more working hours. This demand of organized railway labor is accompanied by demands for other legislation such as for limitation of the length of trains. The ostensible purpose is to increase employment. The actual purposes are also to increase average hourly wages and reduce the amount of work done per man. The demands seem to be in the interest of manual workers, both employed and unemployed, and are supported by economic reasoning accepted by many persons as obviously sound and unanswerable, but which is wholly fallacious, and is refuted and condemned by all economists of standing. They are so important because there is not a great economic problem with which the nation is confronted that would not be made more difficult by granting them. They tend to protract and increase unemployment in private business. They therefore tend to necessitate continuance of vast government expenditures for public works and relief. These, by making uncontrolled monetary inflation unavoidable, would cause a disaster worse than the past five years of depression.

The Politics of Organized Labor

But organized labor will fight for these policies for two reasons. One is that most labor leaders believe they are in the self-interest of themselves and their members. The other is that a labor leader is necessarily a politician, who, to retain his position, must ever demand more regardless of all broad and far-reaching consequences. Why this is so is clearly shown in an article in the Atlantic Monthly for November by George E. Sokolsky, long a thorough and impartial student of labor problems. A labor leader, like a Congressman, must always be getting votes to be elected or re-elected. If he does not constantly demand and fight for more for his constituents he will be displaced by some other labor politician who does promise to demand and fight for more. Therefore, whatever gains a labor union makes, a movement always is immediately started for more concessions and advantages.

Leaders of labor unions are professedly the strongest opponents of communism, but, as Mr. Sokolsky shows, they are constantly under an irresistible pressure to work toward the same objective. The objective of communism is the destruction of private ownership of property. Reductions of working hours and advances of hourly wages, if made faster than technological improvements, will destroy business profits. Profits depend upon a large volume of production and low unit costs. Reduction of working hours tends to curtail production, while advance in hourly wages tends to increase unit costs. The destruction of profits by the too rapid success of labor unionism would deprive the ownership of property of all purpose and value and thereby destroy private ownership itself as completely as communism.

Hourly Wages, Profits and Employment

Labor-socialist arguments for reduction of hours and advances of hourly wages are fallacious because based upon unsupported and false assumptions the principal of which is that they will increase employment. Almost 90 per cent of present unemployment is in the durable goods industries and the service industries dependent upon them for business. Therefore, revive business and employment in the durable goods industries and the depression will be ended. But how revive business and employment in the durable goods industries? The railroad industry is one of their largest customers. The railroads, therefore, afford one of the best illustrations of how to revive and how not to revive the durable goods industries.

The railroads' expenditures are roughly divisible into three classes. The largest consists of wage payments to their own employees. Another consists of purchases

of materials used in maintenance and operation. Another consists of "capital expenditures" for improvements. Suppose that immediately the average hourly wage of most railway employees were increased 33⅓ per cent by establishing a six-hour day at eight hours pay. Without a reduction of railway employment the present annual pay roll would be increased at least $500,000,000. But gross earnings are not sufficient now to pay operating expenses, taxes and fixed charges. Consequently, if universal railroad bankruptcy were to be avoided, the number of railroad employees and all buying from the durable goods industries would be reduced, which would reduce employment in both the durable goods and most service industries. It may be said that the increase in the railway pay roll could be offset by a reduction or abolition of interest upon railway indebtedness. But much railroad buying of durable goods is done with money raised by the sale of securities which nobody would buy without the prospect of net earnings. No owner of private capital would buy bonds unless net earnings justified the expectation that the principal and interest would be met. Even the government would not make loans to help increase railway buying of durable goods without the reasonable expectation of net earnings sufficient to meet the principal and interest of its loans.

Hourly Wages and Employment—The Railroad Example

Establishment of a six-hour day at eight hours pay would not increase, but immediately reduce railway employment as well as business and employment in the durable goods and other industries. Railway labor leaders ridicule this view. They say it would be certain to increase railway employment. Well, let us see what effects reductions of hours accompanied by advances in hourly wages actually have had. In 1914 the basic day in railway service was ten hours; in 1933, eight hours. The average hourly wage in 1914 was about 25 cents and in 1933 about 61 cents, an increase of 144 per cent. Average annual compensation per employee was $815 in 1914, and $1,445 in 1933. Significantly enough, however, the *total wages* paid were $1,337,344,000 in 1914 and $1,403,841,000 in 1933, or almost the same.

Why was the *total pay roll* hardly any larger in 1933 than in 1914, in spite of reductions of working hours and a great advance in hourly wages? The total amount of wages that can be and is paid always has been and always will be strictly limited by the amount of gross earnings made. Gross earnings in 1914 were $3,041,300,000 and in 1933 were $3,095,500,000. Gross earnings being almost the same in the two years, the higher hourly wages not only prevented the shorter working day from increasing the number of employees, but reduced the number from 1,640,029 in 1914 to 971,196 in 1933. These figures completely refute the claim that reduction of working hours accompanied by increase in the average hourly rate of wages will bring increased employment.

The 971,196 persons employed by the railways in 1933 gained the advantages of shorter hours and higher hourly pay at the cost of unemployment to several hundred thousand former railway employees because their advanced wages absorbed all the railways could pay employees out of the gross earnings they could and did make in 1933.

Production and Earnings Determine Employment

The unavoidable and necessary relationship between gross earnings, working hours, hourly wages and employment illustrated by these figures goes to the root of the entire controversy regarding proposed further reductions of hours and advances of wages. Railway gross earnings depend upon the rates charged and the volume of transportation produced. The gross earnings of every other industry depend upon its prices and the volume of its production; and the amount of wages it can pay depends upon its gross earnings. The vital and fundamental essential to a large employment is a large production and consequent large gross earnings in industry as a whole. The railways would have employed more men in 1933 if they had had opportunity to produce more transportation. They would have had opportunity to produce more transportation if industry had produced more goods. Production was the smallest in 1933 as compared with 1929 in the durable goods industries. They would have produced more and given more employment if other industries, including the railroads, had been able to buy more from them. The railroads and other industries would have bought more if they had had lower wages and operating expenses and consequently larger net earnings and more ability to raise capital with which to buy. An increase in buying from the durable goods industries would have increased production and employment in them and thereby started recovery from the depression, resulting soon in increases of production, profits, employment and wages all along the line.

The assumption that depression is due to unemployment and can be remedied only by dealing directly with unemployment is the most dangerous of all the fallacies of depression. Both depression and unemployment are due to decline of production, especially of durable goods, and can be remedied only by increasing production. Further reductions of working hours and advances of wages in the railroad and other industries at this stage of depression would hinder or prevent an increase of production, and therefore of employment, and indefinitely protract the depression.

Nevertheless the labor unions, obsessed with their false economic theory, and anxious to take advantage of present conditions to press their claims, undoubtedly will make a great drive upon Congress for legislation that would be ruinous to their own members as well as to other classes. It should be met by the united and determined opposition of all agriculture and business. Pay rolls can be substituted for relief rolls only by measures that will increase the total volume of production and commerce.

Balloon type enclosure at the LaSalle Street station, Chicago, was removed from roof trusses of new low structure

A View of the Dismantling Work from the South, with the Upper Floors of the LaSalle Street Station Visible in the Background

Dismantling of Old Train Shed Presents Difficulties

CAREFUL planning and close attention to engineering detail were required in the recent dismantling of the high "balloon" type train shed at the LaSalle Street station, Chicago, following the construction of a new low shed with a flat roof underneath the old structure. The principle problems encountered were those imposed by the necessity of providing adequate working platforms above the roof structure of the new shed from which the operation could be prosecuted. That this was done with complete success is demonstrated by the fact that few of the patrons passing under the new shed were aware that the 31-year old structure was being rapidly reduced to scrap over their heads.

The framing of the old shed consisted of 19 pin-connected simple-span crescent trusses spaced 30-ft. 3 in. between centers and having a span of 212 ft. 4 in. center to center of supporting columns. At the center line of the shed, the lower chord was 60 ft. above the track level, and the trusses themselves were 25 ft. deep, while a superimposed monitor extended an additional height of 14 ft. The spring line was about 20 ft. above the track level, which is one story above the level of the flanking streets, LaSalle street on the east and Sherman street on the west. Above the track level the spaces between the supporting columns are enclosed with large windows, while below this level these spaces, with few exceptions, are left open to give street vehicles free access to the cab stand and baggage platforms below the track level.

Details of Old Trusses

The top chords of the old trusses were of the usual built-up plate-and-angle box type. The vertical web members comprised pairs of channels with lacing bars, while the bottom chord in each panel embodied four six-inch eye-bars. Pairs of eye-bars of varying sizes formed the diagonals. Lattice girders, serving as purlins, into which were framed rafters of small I-beams, spanned between the top chords of the trusses at the 14 panel points. The roofing comprised precast reinforced concrete slabs, 2 ft. by 5 ft. by 2½ in., with an outer covering of felt laid in pitch. In addition to the monitor, which extended along the top of the shed for nearly its entire length, two projecting ventilators were provided in the roof of each bay, one on each side of the monitor. The monitor and ventilators were of steel angle construction, roofed with concrete slabs.

At the south end, the shed was enclosed above the operating clearance line by a wire glass enclosure carried on a frame of T-bars and I-beams which was supported from the panel points of the end roof truss by 9-in., 10-in., and 12-in. channels. At the north end where the shed joined with the station concourse, the portal frame carried a portion of the roof load and was therefore of heavier construction, comprising lattice columns carrying a frame of I-beams, also enclosed with wire glass. The columns of this frame were carried on a transverse girder spanning between columns into which the roof trusses of the concourse also were framed.

Steel Weighed 1,950 Tons

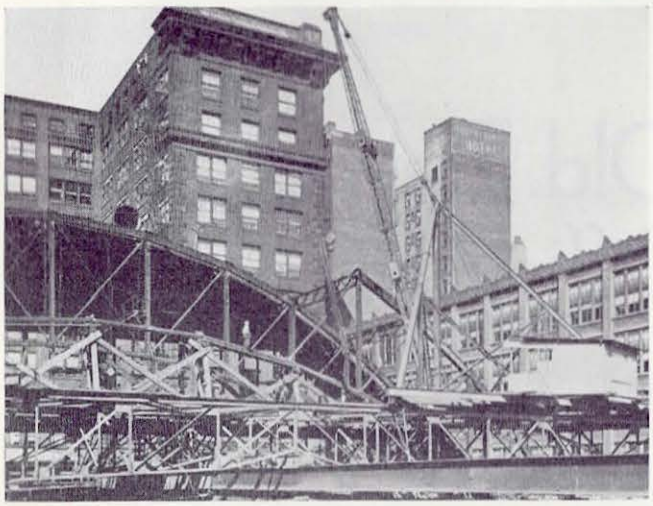
Originally the steel in this shed had a total weight of 1,950 tons, the trusses having a weight of about 50 tons each, with the lattice girders, rafters and other structural members in each bay weighing a similar amount. There were 143,000 sq. ft. of roof slabs with

a total weight of 1,900 tons, the individual slabs weighing 270 lb.

The corrosion resulting from 31 years exposure to locomotive gases had seriously weakened the members of the trusses and as a result the maintenance costs were excessive. In fact, the effective areas of many of the members had been reduced to such an extent that they were reinforced with timbers, a total of 112,000 ft. b. m. of timber having been used for this purpose. Moreover, owing to the presence of fumes and the weakened condition of the trusses, the forces engaged in the repair of the shed were subjected to extremely unfavorable working conditions. These factors combined to dictate the removal of the old shed, and the work of constructing a new shed underneath the old one was carried out last winter, being completed late in the spring.

The New Shed

A detailed description of the new train shed was presented in the May 5, 1934, issue of the *Railway Age*, page 646. Briefly, it comprises a system of transverse trusses spanning between the old side wall columns and



In This View a Vertical Member Has Just Been Severed at the Bottom and Is Being Lifted by One of the Derricks

an intermediate longitudinal support, the concrete slab roof and concrete smoke slots being supported from the lower chords of these trusses. Owing to the character of the platform arrangement under the shed, it was necessary to locate the intermediate support about 12 ft. east of the center line of the shed, so that the new roof trusses have a span of 115 ft. 6¾ in. on the west side, and 92 ft. 9$^{7}/_{16}$ in. on the east. The intermediate support consists of 10 columns spaced 60 ft. 6¼ in. apart and spanned by longitudinal trusses into which the transverse trusses are framed.

A consideration of various methods of dismantling the old trusses led to the decision that the most practical and safe method embodied the use of derricks for handling the disconnected members direct to trucks parked on the two flanking streets. The choice of this method imposed the necessity of providing a suitable traveler to support the derricks on the roof system of the new shed. Furthermore, as the trusses were to be dismantled by cutting the members with oxy-acetylene torches, falsework had to be provided to support the individual trusses while they were being dismantled. The choice of such a method, therefore, required that it be worked out in detail during the design of the new roof system so that consideration could be given to the necessity of providing for the additional load imposed by the derricks, the old trusses, the falsework, and the traveler.

Movable Trusses Used

The traveler consisted of four interconnected transverse trusses designed to move forward on three lines of rollers, one along the intermediate longitudinal trusses of the new shed, and the others along the tops of the outside end posts of the roof trusses. The four traveler trusses were arranged in pairs, the forward pair carrying the falsework on which each roof truss was supported in turn while the members were being cut and removed, and the rear trusses carrying two stiff-leg derricks.

The traveler trusses were pre-assembled rivet-connected deck trusses, the members consisting of single or paired angles except the end posts and entire top chords which were built-up members containing four angles and a web plate. In accordance with the necessity of providing level working platforms the top chords were horizontal. As a means of reducing the amount of steel required, the trusses were designed on the basis of high working stresses, which made it necessary to determine the stresses in the members with the booms of the derricks in every conceivable position.

Each pair of trusses was tied together by a suitable system of bolt-connected sway and lateral bracing, the latter in the plane of the top chords. The two sets of trusses were interconnected at the ends and at the intermediate support so that the entire system could be moved forward as a unit.

The Traction System

In designing the traction system by means of which the traveler was moved forward a primary consideration was to develop a design in which the load would, as far as possible, be carried directly by the supporting columns rather than through the roof trusses of the new shed. While the outside wall columns were not accessible for this purpose those in the intermediate support were, so that it was possible to place the load points of the center track directly on the tops of the columns which extended through to the tops of the roof trusses.

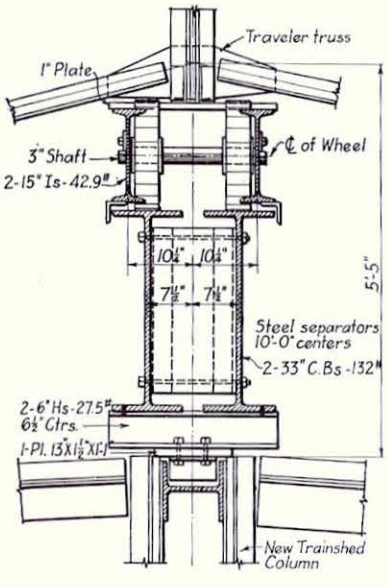
The wheels on which the trusses were moved forward were 18 in. in diameter with 4-in. flat treads. They were arranged in trucks of 4 wheels each, one truck being located under the outside end of each truss and under each line of trusses at the intermediate support, a total of 12 trucks comprising 48 wheels. In each truck the wheels were arranged in pairs on 3-in. steel axles in a frame formed by two parallel 15-in. I-beams with the top and bottom flanges cut away to permit the wheels to protrude.

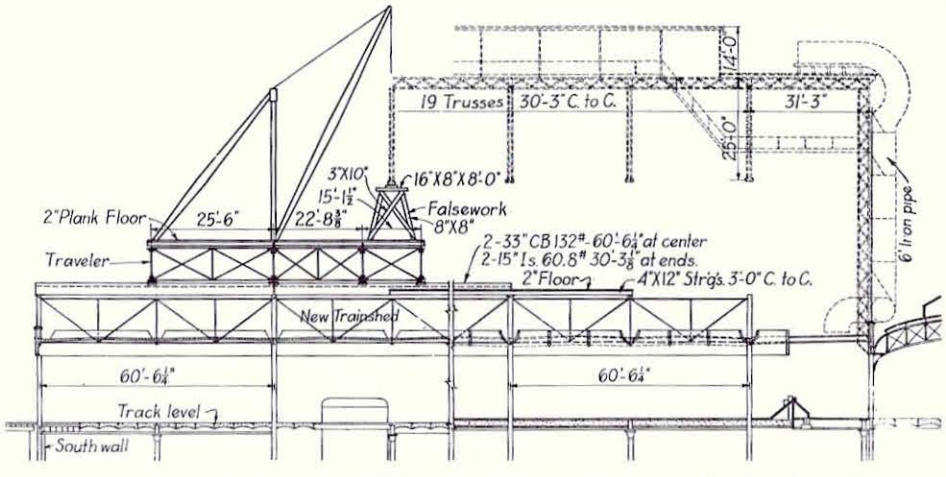
The tracks on which the wheels moved consisted in each case of two parallel beams set so that the wheels engaged the upper flanges. At the intermediate support the track consisted of 33-in. CB section beams 60 ft. 6¼ in. long which spanned between the intermediate row of columns carrying the new roof trusses, suitable anchorage being provided at the bearing points. Supported in this manner, the track transmitted its full complement of the load on the falsework and derrick trusses directly to the columns without imposing any part of it on the new longitudinal roof trusses. The tracks under the outer trucks, which extended along the outer ends of the top chords of the transverse roof trusses, comprised 15-in. 60.8-lb. I-beams spanning 30 ft. 3⅛ in. between supports on the trusses of the roof system. The tracks were assembled entirely by bolted connections so that they could be quickly dismantled and moved forward as the work progressed.

The trusses were drawn forward over the tracks by

utilizing the power of the derrick hoisting machinery, the fall lines and necessary sheave blocks being attached to the front end of the central and side tracks which were securely anchored to the new shed columns and transverse trusses.

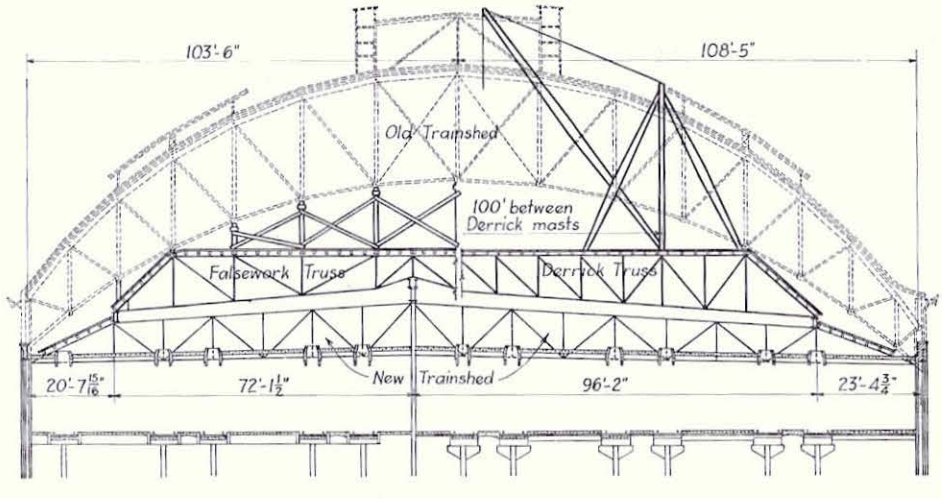
The working deck on the traveler trusses consisted of 4-in. by 12-in. stringers spaced 3-ft. apart and covered with a 2-in. plank floor. A similar floor laid on the top chords of the new roof trusses for two panel lengths ahead of the forward truss of the dismantling unit served the dual purpose of protecting the roof slabs from falling material and of providing a working platform in advance of the operations. To prevent material from falling into





Above—Longitudinal Section Through the Shed, Showing the Set Up of the Dismantling Equipment

Above—Section Through the Traveler Track at the Intermediate Support, Showing the Truck Construction. Right—Section Through the New and Old Sheds, Showing Part Sections of the Dismantling Equipment, the Falsework and a Falsework Truss on the Left and a Derrick and Derrick Truss on the Right



the streets, an outrigger was provided on each side of the train shed. These outriggers, which were about 90 ft. long, were cantilevered a distance of about 9 ft. beyond the building line. They consisted of 3-in. by 12-in. by 16-ft. beams on 2 ft. centers, carrying a floor of 2-in. planking.

Falsework Required

As the members of the crescent trusses were pin-connected throughout, it was not possible to cantilever any part of them during the dismantling work, and consequently the installation of falsework under all panel points was required. The shoring bent at each panel point consisted of two 8-in. by 8-in. posts with a 16-in. by 8-in. by 8-ft. cap and 3-in. by 10-in. sway bracing, this assembly being supported on the trusses by means of an 8-in. by 12-in. sill. Diagonal bracing between successive bents, embodying the use of 3-in. by 10-in. timbers, was also employed. Following the completion of the shoring, oak wedges were driven simultaneously between the caps of all bents and the lower chords of the crescent truss until all members of the truss were relieved of stress.

Removal of the concrete slab roof of the old shed was done by a night shift sufficiently in advance of the dismantling work to preclude delay to the latter while the slabs were being removed. The slabs, waterproofing and other material from the roof were lowered by the derricks to the working deck on the roof trusses from which point they were dropped through chutes in the smoke slots of the new train shed to cars spotted on the station tracks below.

In dismantling the individual trusses, the work was begun at the center, the top chords, lattice purlins, diagonals and verticals being removed progressively each way from the center. The lower chords, which rested directly on the falsework, were left in place until all other members in the truss had been removed. Owing to the heavier construction, 20 min. was required to cut through the top chord, as compared with 10 min. for the verticals; for this reason the work was organized in such a manner as to require a minimum of cuts in the top chords. This was accomplished by making the cuts so that the pin at each top chord connection together with short sections of the lattice purlin, the vertical and the diagonals, remained attached to the top chord. In other words, only one cut was made in the

top chord between adjacent panel points while two cuts were made in all other members except the bottom chords. The cutting force consisted of four to six men with torches, two of whom made preliminary cuts, in which they cut the members about two-thirds through.

In commencing the dismantling work and before the operations could be reduced to a routine, it was necessary to remove the portal frame and the first and second trusses at the south end to provide sufficient space behind the falsework trusses for the erection of the derrick trusses and the stiff-leg derricks. The portal frame and the two trusses, were therefore dismantled by a locomotive crane with a 100-ft. boom, which operated from the station tracks. This crane was also utilized to lift the pre-assembled derrick and falsework trusses and the stiff-leg derricks into position on the roof trusses.

The Stiff-Leg Derricks

The two derricks used for the remainder of the work were equipped with 75-ft. booms and had an approximate weight including hoisting machinery of 20 tons each. The masts were located directly over the forward truss of the supporting traveler at the apex of a horizontal triangular frame of I-beams which formed the bed of the derrick, the operating motors and mechanism of the derricks being located on this bed near its base, which was cantilevered several feet beyond the rear truss to act as a counterweight. As the trusses were designed on the basis of a maximum derrick load of 5,000 lb., the derricks were limited to this amount although their lifting capacity was much greater.

The last part of the structure to be removed was the portal frame at the north end, which required no falsework, although it was braced by guy lines after all lateral support from the roof system had been removed. Attached to this portal, in a vertical position, was an iron pipe, 6 ft. in diameter, which had formerly been used as the discharge duct of a ventilating system for conveying cumbustion gases from the station cab stand underneath the track level. This pipe was cut into sections with gas torches, the sections being handled by the derricks to trucks on the adjacent streets.

The work of dismantling the old train shed was begun on July 15, and the last truss was removed on October 3. As the trusses were dismantled, that portion of the brick side walls and the wall columns of the old shed that projected above the bearing points of the new roof trusses were removed and a low coping installed. The coping, which was constructed of brick with a stone cap, is supported on an existing 18-in. I-beam spanning between the wall columns.

The plan for dismantling the old shed, together with the design of the trusses, was developed by the engineering departments of the Chicago, Rock Island & Pacific, and the New York Central, which own and use the station jointly. The project was carried out under the direct supervision of I. L. Simmons, bridge engineer of the Rock Island, the design being developed by T. C. Frederick, while H. Bober was in charge of the dismantling work. A. T. Hawk, engineer of buildings of the Rock Island, acted in an advisory capacity, and B. R. Leffler, bridge engineer of the New York Central lines west of Buffalo, approved all matters of design and method. The entire project of erecting the new shed and dismantling the old structure was handled under a general contract by the Ellington-Miller Company, Chicago. All steel work in connection with the dismantling of the trusses was done by the F. K. Ketler Company, Chicago, while the removal of the concrete slabs and other roofing material was carried out by the Harvey Wrecking Company, Chicago.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended November 3 totalled 612,457 cars, a decrease of 11,795 cars as compared with the week before and of 1,679 cars as compared with the corresponding week of last year, although it was an increase of 25,155 cars as compared with 1932. Loading of miscellaneous freight, coal and live stock showed increases as compared with last year and merchandise, coal and coke showed increases as compared with the week before. The summary, as compiled by the Association of American Railroads, follows:

Revenue Freight Car Loading

Week Ended Saturday, November 3, 1934

Districts	1934	1933	1932
Eastern	130,689	133,530	129,247
Allegheny	110,406	114,590	106,422
Pocahontas	43,099	42,883	43,370
Southern	91,378	88,653	87,299
Northwestern	81,381	77,292	68,679
Central Western	101,225	102,689	96,955
Southwestern	54,279	54,499	55,330
Total Western Districts	236,885	234,480	220,964
Total All Roads	612,457	614,136	587,302
Commodities			
Grain and Grain Products	27,870	31,155	29,872
Live Stock	24,557	20,017	19,703
Coal	124,288	119,765	124,728
Coke	5,840	6,098	4,997
Forest Products	21,640	23,181	17,402
Ore	10,707	15,078	4,290
Merchandise L. C. L.	162,537	171,968	176,803
Miscellaneous	235,018	226,874	209,507
November 3	612,457	614,136	587,302
October 27	624,252	642,423	617,284
October 20	640,280	657,005	641,985
October 13	635,639	670,680	649,690
October 6	631,318	662,373	625,089
Cumulative Total, 44 Weeks	26,452,745	24,861,297	24,094,042

Car Loading in Canada

Car loadings in Canada for the week ended November 3 totaled 51,967 as against 50,688 cars in 1933 and 55,402 cars for the previous week, according to the compilation prepared by the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
November 3, 1934	51,967	19,502
October 27, 1934	55,402	19,748
October 20, 1934	56,873	19,663
November 4, 1933	50,688	19,490
Cumulative Totals for Canada:		
November 3, 1934	1,967,948	945,503
November 4, 1933	1,706,816	810,436
November 5, 1932	1,868,526	835,934

THE PENNSYLVANIA-READING MOTOR LINES, highway subsidiary of the Pennsylvania-Reading Seashore Lines, has been granted permission by the Board of Public Utility Commissioners of New Jersey to abandon a bus route extending from Sea Isle Junction to Stone Harbor. The bus service involved had been provided in co-ordination with West Jersey and Seashore train service, but since the consolidation of that road into the Pennsylvania-Reading Seashore Lines, the operation of trains via Sea Isle Junction has been discontinued and thus the Sea Isle Junction-Stone Harbor bus service is no longer required.

Pro and Con of Car Pooling—Part II

H. R. Lake presents the railway transportation officers' ideas on the subject, in answer to O. C. Castle

By H. R. Lake

General Superintendent of Transportation, Atchison, Topeka & Santa Fe

DURING federal control and operation of railroads, all freight cars were pooled. Under the operation of that pool, railroads lost control of their own cars and had to depend largely upon such cars as they received in current interchange of freight for their supply, which was generally inadequate and woefully deficient during the grain harvest, both as to numbers of cars and the deplorable condition of such cars as were available.

During the period in which we labored with the federal car pool, our percentage of box cars of Santa Fe ownership dropped to as low as 7.3 per cent. Our perfectly good box cars, built and maintained before the car pool for the handling of high class freight, were scattered to the four winds. During that time, the Santa Fe spent approximately $500,000 a month repairing foreign cars, while other railroads spent only approximately $150,000 a month repairing Santa Fe cars, but even at that we would not get enough cars and condition them suitably for the high class freight we had to load. Shortages and complaints resulted.

Box cars are variously classified by railroads as to condition, there being some six or seven recognized classifications. A first class car in almost every respect is required for flour, meal, sugar and other sacked edible freight. The Santa Fe owns 33,537 box cars. With control of our cars, such as is possible under present car service rules, we are able to provide suitable cars for all of our loading. During recent years the demand for box cars on western railroads has increased greatly to protect loading during the grain harvest, incident to the development of the combine-harvester-thresher, and this without regard to the total volume of the movement of grain.

Handling the Wheat Crop

During the season of 1921, beginning with June of that year and ending with May of the following year, which was before the combine came into general use, 96,330 cars of wheat were loaded on the Santa Fe, of which 16,210 cars, or 16.8 per cent, were loaded in July. During the first three months, June to August, inclusive, 39,974 cars, or 41.5 per cent of the total crop were loaded. We have had no large crop of wheat since 1931, but compare this with the season of that year, beginning with June and ending with May, 1932, during which year 154,347 cars were loaded on the Santa Fe, of which 41,389, or 26.8 per cent were loaded in July, while during the first three months, June to August, inclusive, 76,062 cars, or 49.3 per cent of the total crop, were loaded. In addition to this grain loading, we had other box car loadings drawing heavily on our supply. We do not think of entering upon a normal grain crop movement without 20,000 to 25,000 of our own box cars conditioned, cleaned and coopered with grain door nailing strips in place, stored and immediately available when the harvest starts, besides all the foreign box cars that we can accumulate over a period of two or three weeks immediately preceding the beginning of the harvest. In no other way could we possibly meet the demand and avoid grain being piled on the ground by the farmers for the want of elevator capacity or cars into which to load it. Moreover, we borrow cars from other railroads as needed and move them to the grain territory along with our cars released from first loadings, in order to keep abreast with the loading.

In 1929 there was a heavy export movement through Galveston. There were insufficient bottoms to move the grain as fast as it was moved into port. There being no place on the farms to store the vast amount of grain cut with combines and coming from the fields, it was up to the railroads to supply cars to avoid its being dumped on the ground. The result was that over 10,000 cars of grain were backed up on our railroad from Galveston, Tex., to Oklahoma City, Okla., many of which were delayed for weeks and months before being released. We could have relieved this situation somewhat by placing an embargo upon the loading, but if we had done so, there would have been no place to put the wheat.

Not being able to release and return these cars to the wheat loading territory, it became necessary for us to call on other railroads, through the Car Service Division, for help, which we did, and in less than three weeks there were delivered to us 10,000 empty box cars at Chicago and other Illinois junctions. Altogether we received 14,771 foreign box cars from connecting lines from June 23 to July 29.

In accumulating grain cars prior to harvest, we begin 60 to 90 days in advance of the movement of grain, dependent upon the extent of the crop, to repair and otherwise condition and store cars in the grain loading territory. By having our own cars available, we are able to do this systematically and save money in the operation by not overcrowding terminals and repair shops, or interfering with the handling of current business.

During federal operation when cars were pooled, our ownership of box cars on line dropped to as low as 7.3 per cent. Since that time, our percentage has not fallen below 32.8 per cent and during the last 10 years it has never been less than 53.9 per cent. At the beginning of our last heavy grain movement on June 15, 1931, it was 89.2 per cent and in June, 1934, it was 86 per cent. At the present time, it is 86.5 per cent. If per diem payments to car owners should be waived or reduced under a new car pool to such an extent

Editor's Note:

In last week's issue, O. C. Castle, director, Section of Car Pooling, of the Federal Co-ordinator's staff, presented the arguments of the proponents of car pooling. In this issue, Mr. Lake presents the viewpoint of those who are opposed to car pooling. Both appeared before the Trans-Missouri-Kansas Shippers' Regional Advisory Board at Kansas City, Mo., on October 11.

that they would no longer constitute a penalty, we are fearful that we would again lose our cars which are scientifically designed and built in dimensions primarily for the handling of bulk grain and other commodities peculiar to the West.

A Perfect Picture of Economy—Theoretically

Theoretically, the pooling of freight cars presents one of the most perfect pictures of economy in all railroad operation, but our experience indicates that it lacks practical application, at least so far as box cars are concerned. Box car loadings of this country are greatly diversified and call for much specialization. Advocates of freight car pooling claim that the pooling of cars will reduce car ownership; that it will take fewer cars to handle the rail traffic of this country; and that it will reduce empty car mileage. As to car ownership, the number of freight cars in the service of the Class I lines has shown a steady decline from a peak in 1925 of 2,357,234 cars, to 2,036,000 cars in 1933, a reduction of 321,234, with a still further reduction in 1934.

Several railroads have lately called on the Santa Fe for the loan of serviceable box cars and we have allowed 2,500 of our stock cars to go to other lines to help them out during the recent movement of drouth-stricken stock. A transportation officer of a large coal-producing railroad recently said that he expected to see a general shortage of coal cars this winter. Notwithstanding that the average capacity of freight cars was increased from 41.0 tons in 1921 to 47.1 tons in 1933, or 15 per cent, the total aggregate freight car capacity declined from 106,179,768 tons in 1930 to 95,896,000 tons in 1933, a reduction of 10,283,768 tons, or over 10 per cent. This, coupled with the fact that there are thousands of cars still entering into the car ownership count that will never be returned to service, makes it difficult to visualize any sort of car pool reducing car ownership still further.

Car Ownership Discouraged

Actually, a car pool will discourage car ownership. A transportation officer of one of the largest railroads in this country told me recently that his road had an approved item on its budget to build 2,500 freight cars, but because of the agitation for a car pool, it had cancelled the item and the cars will not be built. I have had in mind recommending to our management the building of 1,500 box cars in 1935, but because of the prospect of a car pool and because of the Santa Fe having, in my judgment, already more than enough box cars to make up its fair quota, I shall not make that recommendation. There is no inducement under a car pool, so far as my present understanding of a car pool extends, for any railroad to contribute to the pool more than its quota of cars to be worn out in the service of railroads which contribute less than their quota.

The minimization of empty car miles is perhaps the principal claim for economy presented by advocates of the pooling of cars. Under the present plan of operation, the lure of placing surplus ownership cars on a per diem earning basis causes some railroads to disregard car service rules and load their cars to other lines instead of using available foreign cars. This results in the foreign car moving off line empty and in many cases the handling of the system car empty on its return to the owner. This causes three movements whereas if the foreign car had been loaded, there would have been only one movement. Such handling, except where the foreign car is in such poor condition that it cannot be used for the kind of loading that is available or made fit with reasonable expense, is, in my judgment, a short-sighted policy and it is not done on the Santa Fe.

Empty Mileage Controllable

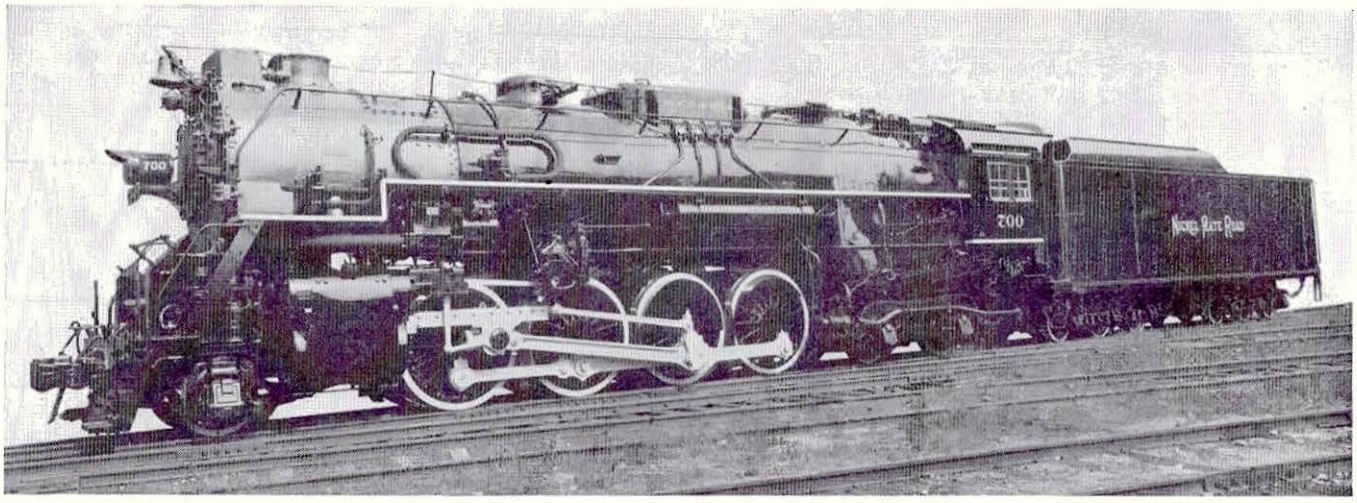
There is every reason why the Santa Fe should have a high percentage of empty mileage because it handles more petroleum and refined oils in tank cars than any other railroad. This is a so-called "one-way commodity." The Santa Fe ranks second largest in the handling of live stock, which is another one-way commodity. The Santa Fe owns nearly 18,000 refrigerator cars and is one of the largest handlers of refrigerator freight. This is also largely a one-way commodity. Despite all this, however, the Santa Fe ranks with the five large railroads of the country showing the lowest percentage of empty car miles. We accomplish this by making foreign cars earn their way off line, holding those cars if necessary under per diem, or back hauling them a reasonable distance to get a load.

What the Santa Fe has done in this respect, any railroad can do. I do not believe that a car pool is necessary to reduce the percentage of empty car mileage to a reasonable figure. It can be accomplished in a much simpler way and free of hazards tending to disrupt service. Any plan that may be adopted for the pooling of cars can be made effective only by centralized or bureau control, a most serious handicap, because bureaucratic control of so important a phase of railroad operations as that of car supply can never fully take the place of individual and personal service from a service standpoint under competitive operation. Aside from this, any plan of pooling cars should be so designed that it will not discourage but rather encourage car ownership, sufficient at least to provide cars necessary to protect freight normally originating on any one railroad. Railroads not owning enough cars to meet their demands and supplying their deficiency by confiscating other railroads' cars, whether this be done under bureau authority or not, should pay something more for cars so used than the actual cost of ownership and maintenance. They should not be allowed to shift their financial burdens on to other railroads. If this is not provided for in any plan which may be adopted, a car shortage will follow.

Proper Distribution Important

The plan should not so operate as to deprive a railroad of its own cars built and maintained to meet the peculiar needs of the owning line. There should be an automatic and no less effective return of cars to the owning line than the present rules afford. Any failure to observe this fundamental rule will surely operate against the successful operation of a pool. During 1919, the Santa Fe paid loss and damage claims because of loss of bulk grain from cars, damage from weather on account of leaky roofs and sidings and because of unfit and unclean cars, amounting to $236,216; in 1920, $268,791; and in 1921, when we were still suffering from the effects of the federal car pool, $411,722, most of this being on losses that occurred in previous years, a total for the three years of $916,729. Compare this with $40,406 in 1933, $62,077 in 1932 and $74,275 in 1931, or a total for those three years of $176,758, a difference between the two three-year periods of $739,971. We would have to save a lot of empty car miles to offset that tremendous loss due to poor equipment. Any saving in empty car miles that might be made on the Santa Fe under any sort of car pool that I can visualize, observing car service rules as consistently as

(*Continued on page 611*)



Nickel Plate 2-8-4 Type Fast Freight Locomotive

Nickel Plate Buys 2-8-4 Type Locomotives

Fifteen now being delivered by American for fast freight service—Tractive force, 64,100 lb.

THE first locomotives of the 2-8-4 type to be placed in service on that railroad are now being delivered to the New York, Chicago & St. Louis by the American Locomotive Company. These locomotives, of which there are fifteen in the order, are designed for fast freight service. The boilers are of generous capacity to provide a high sustained horsepower at speeds, and the rated tractive force, with a boiler pressure of 245 lb., is 64,100 lb. The locomotives have cylinders 25 in. in diameter by 34 in. stroke, and the driving wheels are 69 in. in diameter.

In order to provide for possible demands for increased power in the future the boiler and all the machinery for these locomotives were designed for a boiler pressure of 250 lb. and provision has been made for an increase in cylinder diameter from 25 in. to 26 in. The design also contemplates the possible future application of a booster, if so desired.

Including the Nickel Plate order, there are now 298 locomotives of the 2-8-4 type, which was introduced in 1925, on nine railroads. Comparisons of the important dimensions and proportions of these locomotives are set forth in one of the tables.

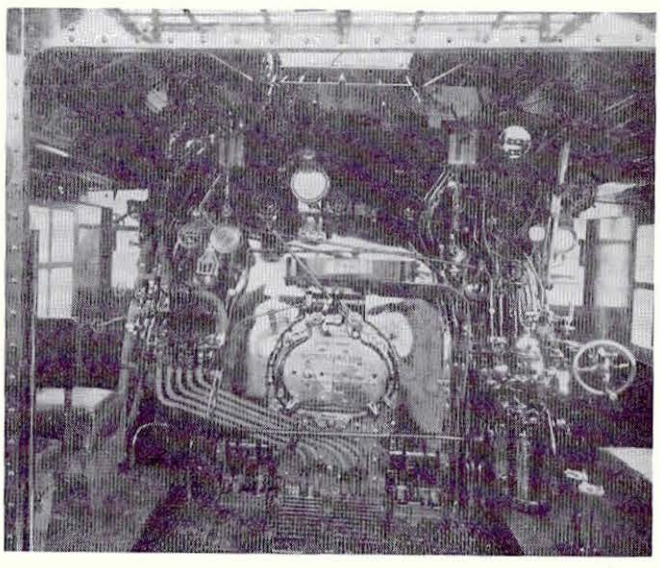
The Boiler

Special attention was given to the boiler design with a view of providing ample steam generating capacity at all times and for all services. Using Cole's ratios the calculated cylinder horsepower is 2,754 and the calculated boiler horsepower is 3,186, or a ratio of boiler horsepower to cylinder horsepower of 115.7.

The boiler is of conical design, 86 in. inside diameter for the first course, on which is mounted the steam dome, and increased to 98 in. outside diameter in the third course over the combustion chamber. The total length of the boiler, including the smokebox, is 44 ft. 8 7/16 in.

The Firebox

The firebox is 135 1/16 in. long by 96 1/4 in. wide, with a combustion chamber 42 in. long. The firebox contains two thermic syphons and two arch tubes. The grate area is 90.3 sq. ft., the grates being of the Firebar type. Three combustion tubes, 2 in. diameter, are provided on each side of the firebox together with suitable steam



The Cab of the Nickel Plate Locomotive Is Roomy and Equipment Well Located

nozzles. The stoker was furnished by the Standard Stoker Company.

There are 77 2¼-in. tubes and 202 3½-in. flues, both tubes and flues being hot-drawn seamless steel. The length over tube sheets is 19 ft. The superheater is Elesco Type E and has an area of 1,992 sq. ft. heating surface. Flexible and rigid staybolts were supplied by the Flannery Bolt Company.

The evaporative heating surface totals 4,818 sq. ft., of which 462 sq. ft. is in the firebox, including arch tubes and syphons, and 4,356 sq. ft. in the tubes and flues.

The smokebox is 89 1/16 in. outside diameter and 116 in. long. The smoke stack, the top of which is 15 ft. 8 in. above the rails, has a diameter of 21 in. The exhaust nozzle is 8½ in. diameter. All auxiliary exhausts have been kept outside of the smokebox. This has the effect of keeping all water and condensation out of the smokebox and should improve the drafting. The exhaust from the feedwater heater is connected directly to a passage cast as part of the smoke stack.

A Worthington Type S feedwater heater is applied with hot and cold water pumps on the left-hand side and a Nathan Simplex NL injector on the right side. A Nathan low-water alarm is provided.

The blow-off equipment, including valves and muffler, were furnished by the Wilson Engineering Corporation, the centrifugal muffler being located on top of the boiler immediately back of the safety valves.

A 9½-in. drypipe leads to the American multiple front-end throttle. These locomotives present a particularly neat appearance. This is due partly to the fact that the piping had been placed under the jacket wherever possible. Another noticeable feature of the design is the large size sand box which has a capacity of 60 cu. ft.

The cab is large and roomy and the location of all valves and fixtures has been worked out carefully to provide maximum accessibility and visibility. The cab is fitted with Prime clear-vision windows and windshields. The seats are of the Van Dorn pattern, two seats being fitted on the left side.

Table of Dimensions and Weights of the N. Y., C. & St. L. 2-8-4 Type Locomotives

Railroad	N. Y., C. & St. L.
Builder	American Locomotive Co.
Type of locomotive	2-8-4
Service	Fast freight
Rated tractive force	64,100 lb.
Cylinders, diameter and stroke	25 in. by 34 in.
Valve gear, type	Baker
Valves, piston type, size	14 in.
Maximum travel	8 in.
Specified weights in working order:	
On drivers	254,000 lb.
On front truck	53,000 lb.
On trailing truck	109,000 lb.
Total engine	416,000 lb.
Tender	358,000 lb.
Wheel bases:	
Driving	18 ft. 3 in.
Rigid	18 ft. 3 in.
Total engine	42 ft. 0 in.
Total engine and tender	87 ft. 8¾ in.
Wheels, diameter outside tires:	
Driving	69 in.
Front truck	33 in.
Trailing truck	F. 36 in.—B. 43 in.
Boiler:	
Type	Conical
Steam pressure	245 lb.
Fuel	Soft coal
Diameter, first ring, inside	86 in.
Firebox, length and width	135 1/16 in. by 96¼ in.
Combustion chamber length	42 in.
Tubes, number and diameter	77—2¼ in.
Flues, number and diameter	202—3½ in.
Length over tube sheets	19 ft. 0 in.
Tube spacing	F. ¾ in.—B. 11/16 in.
Grate type	Fire bar
Grate area	90.3 sq. ft.
Heating surfaces:	
Firebox and comb. chamber	343 sq. ft.
Arch tubes	19 sq. ft.
Syphon	100 sq. ft.
Firebox, total	462 sq. ft.
Tubes	857 sq. ft.
Flues	3,499 sq. ft.
Tubes and flues	4,356 sq. ft.
Total evaporative	4,818 sq. ft.
Superheating	1,992 sq. ft.
Comb. evaporative and superheating	6,810 sq. ft.
Tender:	
Style	Rectangular W.B.
Water capacity	22,000 gal.
Fuel capacity	22 ton

Cylinders and Running Gear

The chassis is of the built-up construction type. The cast-steel bar frames were furnished by the Ohio Steel Foundry Company and the frame cradle castings by the General Steel Castings Corporation. The cross-ties are of unusually rugged construction, the guide yoke cross-tie being of a heavy box-section design. Sliding shoe supports for the boiler are used at both front and back of the firebox. Particular attention has been given to the bolting of all parts, especially the cylinders which are of cast steel and which were furnished by the Ohio Steel Foundry.

The distributing valves are of the piston type, 14 in. diameter with 8-in travel. The valve gear is of the Baker long-travel type controlled by a Franklin Precision type reverse gear. Both piston rods and valve rods are packed with Garlock metallic packing. The crossheads are of the multiple-bearing type and are fitted with Security wrist pins.

The driving wheels are 69 in. diameter with 62-in. centers. The driving boxes have Alco cellars with spreaders and the front boxes are provided with the Alco driving-box cushioning device. Franklin adjustable wedges are also provided. The two-wheel engine truck, which is of the General Steel Castings design, is of the outside-bearing type and has 33-in. rolled steel wheels. The trailing truck is of the Delta four-wheel type, the

Number and Size of 2-8-4 Type Locomotives

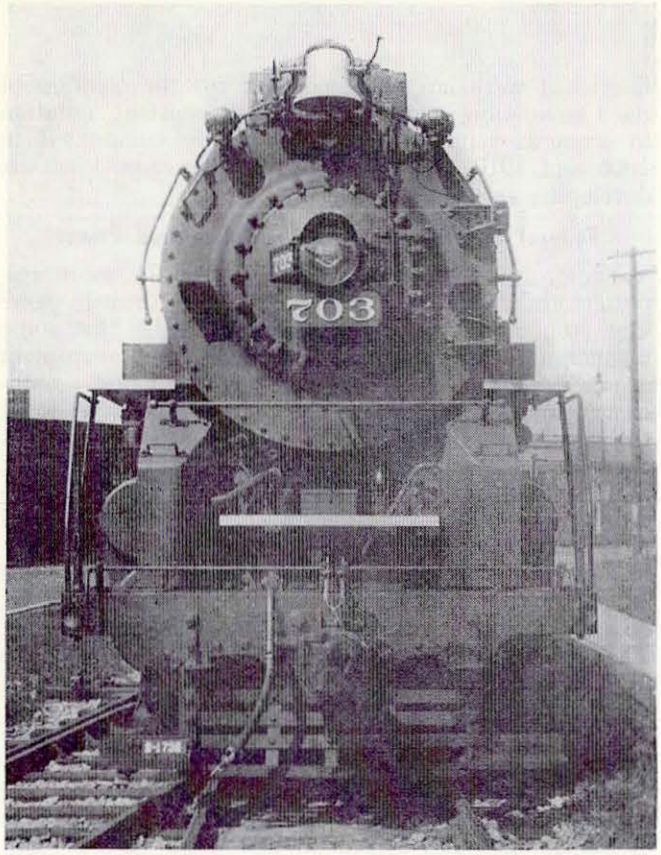
Road	Builder	No.	Date	Weight, lb.	Cylinders, in.	Drivers, in.	Steam pressure, lb.	Tractive force, main cylinders
B. & A.	Lima	55	1925	389,000	28 x 30	63	240	69,400*
Ill. Cen.	Lima	50	1926	388,000	28 x 30	63	240	69,400*
C. & N. W.	American	12	1927	397,000	28 x 30	63	240	67,200*
Erie	American	25	1927	443,000	28½ x 32	70	225	70,000*
Erie	Lima	45	1927	457,500	28½ x 32	70	250	72,000*
Erie	Baldwin	35	1928	461,470	28½ x 32	70	225	71,000*
B. & M.	Lima	25	1928–9	393,000	28 x 30	63	240	69,400*
T. H. & B.	Montreal	2	1928	383,000	28 x 30	63	240	69,000
Mo. Pac.	American	5	1928	404,000	28 x 30	63	240	70,500*
Mo. Pac.	Lima	25	1929	412,200	28 x 30	63	240	69,400
A. T. & S. F.	Baldwin	4	1927	396,500	27 x 32	63	220	69,200*
N. Y. C. & St. L.	American	15	1934	416,000	25 x 34	69	245	64,100

* Equipped with booster which adds 12,000 lb. to 13,500 lb. to rated tractive force.

front wheels 36-in. rolled steel and the back 43-in., steel tired.

The air-brake equipment, which was furnished by the New York Air Brake Company, includes two 8½-in. cross-compound pumps which are mounted in front, ahead of the cylinders. There are three main reservoirs with a combined capacity of 70,000 cu. in. The brake valves on five engines are pedestal mounted. Union Switch & Signal Company train control is applied to 10 locomotives.

The tender is of large size, has a water capacity of 22,000 gal., and a coal capacity of 22 tons. It is of the



Front View of Nickel Plate 2-8-4 Type Locomotive

rectangular type with a cast-steel water bottom. A cast steel stoker conveyor was welded to the tender water-bottom casting, thus making it practically integral therewith. Particular care was given to the design of the tank bracing. The trucks are of the Buckeye six-wheel type with 33-in. Davis steel wheels, 6½-in. by 12-in. journals and clasp brakes furnished by the American Steel Foundries.

THE GREAT WESTERN OF GREAT BRITAIN recently introduced what it calls the "World's Fastest Newspaper Train" in order to provide the people in practically every town and village of South Wales with city newspapers by breakfast time. The train, which operates between London and Swansea, is scheduled to make the 133½-mi. run between London and Newport non-stop in 137 min. This is four minutes faster than the schedule of any London-Newport day-time passenger service. The train is drawn by a locomotive of the "Castle" class, the type used on the Great Western's "Cheltenham Flyer," the world's fastest steam train. The Great Western had previously introduced a similar newspaper train service from London to the west of England in which connection the 226 mis. from London to Plymouth are covered in four hours.

Pro and Con of Car Pooling

(*Continued from page 608*)

we do, would be more than offset by handicaps with which it would surround our operation.

The plan should not subordinate the judgment of the individual railroad manager as to his current and prospective car requirements to that of some bureau manager, so long as he does not accumulate and hold more cars than represented by his railroad's ownership. It would be most unfortunate if a railroad were forced to surrender to some other railroad cars accumulated and conditioned for prospective loading and a shortage of cars should then result. Surely a railroad that gives up cars under such circumstances should not be held responsible for any shortage that may occur therefrom, yet the Transportation Act specifically provides that the loading line shall be held responsible for suppying necessary suitable cars. Those who may be responsible for the plan will be assuming a great responsibility if they do not safeguard this important point.

The plan should be so designed as not to dissipate any possible savings claimed for it through creating new and offsetting expense in its administration, such as more supervisory and clerical work, increased number of reports and duplication of effort. This red tape is a great drawback to any bureaucratic form of operation and unless closely guarded against is apt to undo all that may be gained from savings in operation in this, at best, most doubtful undertaking.

The plan should not penalize a car owner because under the exigencies of operation its cars may not be returned to it but stored on some other railroad at the expense of the owners, and so keep the owners from equalization when it could just as well take care of its own cars. The plan should not discourage a railroad having a surplus of cars from helping out another railroad short of cars by penalizing it with added maintenance costs in moving the cars to the line that is short, nor fail to compensate it fully for the use of its cars. This is now automatically taken care of by the $1 per car day per diem paid to the owner by the using line.

The plan should not encourage a railroad that is endeavoring to protect its best interests, to falsify its reports to prevent cars needed for prospective loading from being ordered away from it, on the assumption by some bureau manager that they are surplus and not needed by the holding line. The plan should not complicate the present simple method of car accounting locally and as between railroads without deducting the additional expense caused thereby from the savings, if any, otherwise effected, in arriving at the net saving.

The plan should not allow railroads to assign old and obsolete cars in an unserviceable condition to be rehabilitated at the expense of the pool. The plan should guard against undue delay and cost in repairing and rebuilding cars. Box cars are of many types, repair parts are interchangeable only to a limited degree. Any failure to meet the bad order car situation will tend to defeat the pool.

On the Santa Fe we have always striven to make that word, Santa Fe, a symbol of service, realizing as we do that our success has and will continue to hinge upon it. We naturally, therefore, look with fear upon new and untried innovations that would sacrifice service for problematical economy. Never before were we required as now to give service, with subsidized transportation agencies all about us competing for every pound of freight. Take away from us control of our car supply and you strike at the very foundation of all that we stand for.

Co-ordinated Transportation Regulation*

Basic question is whether there is something for federal government to do to improve conditions and thereby prevent the present battle royal from continuing to the bitter end

By Joseph B. Eastman

Federal Co-ordinator of Transportation

THE modern community is absolutely dependent upon transportation and could not exist without it. That is why we are always in some sort of a row over it. It is one of our largest bones of contention. The railroads were for years the great battle-ground of controversy. Now warfare is being waged on several fronts, or, to use a better metaphor, in a huge battle royal. Within a fraction of a life-time the transportation situation has become confused and complicated almost beyond belief, and is now a hurly burly of railroads, steamships, barge lines, motor trucks, motor buses, pipe lines, and air planes.

What Are the Fundamentals?

In this situation, is there anything for the federal government to do to improve conditions and, if so, what, or is the battle royal to go on to the bitter end? That is the basic question. The way to approach that question, I take it, is to start with fundamentals, if we can, and not with details. Now what are the fundamentals? Let me try my hand at them:

First.—The country ought to have the best and cheapest means of transport. If a new agency develops which is better than an older one, that is unfortunate for the latter, but progress cannot wisely be halted for its protection. It would have been a crime if the railroad had been stopped for the benefit of the stage coach.

Second.—The country ought to be protected against unnecessary duplication or waste in transportation, whether by the older or the newer agencies. Some waste cannot be avoided, but there is much which can be, and in one way or another we all pay for it. It cannot be quarantined, nor can the evil effects be confined to the guilty party.

Third.—The country ought to have at all times safe, convenient and efficient service by reliable and responsible operators. In the long run these conditions cannot be met unless the carriers are able to operate at a reasonable profit and with fair treatment of labor.

Fourth.—The rates charged for transportation ought to be known, dependable and reasonable, and relatively fair to all shippers, places, and localities, whether they be big or little. The fact that good business conditions require known and comparatively stable rates has always seemed self-evident to me. Recently I have seen this questioned. I suggest to any who doubt the fact that they read the first annual report of the Interstate Commerce Commission, written in 1887 at a time when railroad rates were neither known nor stable, and by a very wise man, Judge Cooley. The evils which then flourished were largely responsible for the creation of the Commission, and indeed for the constant agitation to strengthen its powers which finally culminated in 1906 and 1910. Evils of precisely the same kind are developing very rapidly today.

Federal Government Alone Has Required Power

These, I believe you will agree, are the more important fundamentals. How can we bring them to pass? One point needs no debate. No one doubts that some manner and degree of control by the federal government is necessary. Nowhere else can there be found a sufficiently long arm or sufficient power. And few doubt that this control must extend, not only over rates and charges, but over the right to engage in transportation, the provision of new facilities, and such matters as accounting and statistics. The railroads, which have had plenty of experience, concede this; so does the motor bus industry; so, in principle, does the motor truck industry; so do many of the water lines; and so, I believe, do the great majority of the shippers of the country. The differences of opinion are largely with respect to the extent and the ways and means of federal control.

Perfect legislation, if it can be had at all, certainly cannot be produced at the first attempt. No matter how skilled the designer, no perfect machine can be developed from blue prints alone, or even from a working model. It must be put to work under the conditions of actual operation before all the "bugs" are brought to light.

Find Good Men for Regulatory Jobs

Nor is this all. No legislation, however perfect, will do a good job except in the hands of good men. We have, I think, been reasonably fortunate in the past, but if you want good public regulation of transportation, you will continue to use your influence in favor of the selection of men of the necessary character and ability. However, be sure that you do not look for men who will serve your own particular interests. The only interest that a man on that job ought to serve is the general public interest, regardless of any particular factions or groups or localities, and the job cannot be well done on any other basis.

In the drafting of regulatory legislation, it is often necessary to lay down a rule to guide the action of the regulators. In the Interstate Commerce Act the usual rule is to find out what is "consistent with the public interest." I know of no better rule, for it goes directly to the heart of the matter. When a legislative body undertakes to specify, it almost invariably gets into trouble, for no one can foresee all the things which may affect the public interest in any given case. As the result of considerable experience, I am strong for the

* Abstract of an address delivered on November 14 at the annual meeting of the National Industrial Traffic League in New York.

broad language and the omission of narrowing specifications. Trust the men to do the work; but be sure, if you can, that they are the right men, and when you get them, protect them against political influence and disturbance.

These generalities all lead up to the fact that I am recommending that the water carriers and the highway motor carriers be regulated, as are the railroads, the express companies, and the pipe lines, by the Interstate Commerce Commission. Some objections have been offered to this recommendation.

Regulation of Competing Transport Agencies Not Proposed for Benefit of Railroads

One idea which I do not believe that you entertain but which some seem to have is that the regulation of these other carriers is proposed solely for the benefit of the railroads and with the object of suppressing their competitors. The fact is that more regulation can do no such thing and never has done it, either here or in any other part of the world. In a very few of our States and in some countries where the railroads are publicly owned, regulation of the highway carriers, more drastic than anything which I would recommend, has been attempted which may possibly have had some such object in view. If so, it has not been successful. The highway carriers have not been suppressed, and will not be. They meet public needs which cannot be satisfied in any other way, and so do all other important forms of transportation.

The railroads were able, many years ago, to suppress many of their inland waterway competitors, but they did not do this through regulation. On the contrary they did it in the absence of regulation, and when the Interstate Commerce Commission was given adequate authority the situation was materially improved. Beyond question the administration of the Fourth Section by the Commission and its power to prescribe joint water-and-rail rates and to fix the divisions of those rates have been of benefit to the water lines. To my mind a most significant thing is the extent to which the water carriers and the trucks and the buses are now invoking the protection of the Commission against railroad rate-cutting. Apprehension has ceased to be one-sided and is now mutual.

Those Seeking Equity Must Do Equity

The trouble is that present regulation is a jug-handled proposition. Those who seek equity must do equity. If the water lines and the trucks and the buses are to be protected against the railroads by regulation, obviously the railroads must fairly have an equal opportunity to be protected against them, and no one is likely to have any very effective protection until such equality exists.

The purpose of regulation is not to suppress but to protect. It does not do away with competition but it improves its quality. It encourages co-operation and coordination, it keeps the number of competitors within reasonable bounds, and it stops the vicious circle of rate-cutting which in the end is injurious to every one concerned. Shippers may think that they like to shop around and drive down rates by playing one competitor against another, but they want some curb on competition in their own business, as the NRA codes testify, and if they will look ahead a little, they will want it in the transportation business. There is nothing theoretical about this. The lessons of the past are there for all to study, and what they teach is perfectly plain. Free-for-all competition in transportation never has worked, and it will not work in the future. It can only wind up in a demoralization which is far more likely than regulation to suppress particular transportation agencies and ultimately to bring about combinations and alliances, open or secret, which I am sure you will not like. The experienced and responsible operators of all forms of transportation favor regulation as a protective measure, and they are right. Properly administered, it will protect, not only them, but shippers and investors and labor and the general public at one and the same time.

Cost of Service Will Determine Rates However Regulatory Laws May Read

Another fear which some have is that the trucks and the water carriers will be regulated, not with respect to their own costs of service, but with respect to railroad costs and rates. There are two edges to this question, for the fact is that these other carriers frequently want their rates related to railroad rates, and have often been responsible for their statement in that fashion. As I see it, the opportunity which individual shippers or groups of shippers will always have to operate their own trucks, and even their own boats and barges, will in the end inevitably make cost of service the chief controlling factor, however the law of regulation may read. Nevertheless I have no objection to the recognition of this principle in the law, provided this can be done without drawing the strings too tight. You and I know the difficulties with cost formulas and how many other considerations there are which must often have a bearing on rate-making. The exact phrasing of the statute in this respect is a matter which I believe can be worked out without much difficulty in connection with the Congressional hearings.

As it happens, this question of the comparative costs of service of the different agencies is one in which I am intensely interested and which I believe to be of basic importance. My staff is endeavoring to secure all the information now extant on this subject. We want it not only as a guide to the maximum limits of rates, but also to find out where trucks and buses can be used with profit to supplement or substitute for rail service, and finally assist the different forms of transportation in allocating their economic fields of operation. These fields undoubtedly will always overlap to a very considerable extent, but the overlapping is now carried much further than sound economy justifies. In other words, each agency is trying without profit to perform service which some other agency can perform better and much more cheaply. In the end we expect that the agencies will find that they can all work together to a much greater extent than is commonly supposed, with mutual advantage and with benefit to the shipping and traveling public.

Fear of I.C.C. Unwarranted

Turning to another objection, I find that some fear concentration of control in the hands of the Interstate Commerce Commission. The idea seems to be that highway motor transportation and water transportation are very different things from rail transportation; that the Commission has been preoccupied with the latter so long that its brain paths cannot adjust themselves to the new problems; and that the only safe course to pursue is to have a separate commission for each form of transportation. The slogan of these objectors is that the Commission is "railroad-minded." In view of what I have heard about the Commission from the railroads and their friends for, lo, these many years, I find it difficult to take this slogan seriously. Moreover, I can well remember the year 1920 when the Commission had dumped

in its lap all manner of new duties which were very different from any which it had theretofore undertaken, including the loaning of money to the railroads, the supervision of security issues, the regulation of freight service, power over consolidations and acquisitions of control, authority over the building of new lines and the abandonment of old, and a number of other matters. It was able to adjust its brain paths to these new duties without undue difficulty.

I.C.C. Can Be Adapted to New Work

However, it is true that there has been a tendency in the past to expand the Commission in a rather crude way when new duties were added. Originally it had five members, but then it was successively enlarged, with increasing work, to seven, nine, and eleven members. Deliberations by a body of eleven members have disadvantages. I believe that without disturbing the Commission essentially, it can be expanded and reorganized, if its jurisdiction is extended over the other forms of transportation, in a manner which will enable it to perform its work more effectively and efficiently and at the same time give assurance to the different transportation agencies that there will be a considerable degree of specialization in the treatment of their problems.

Also, apart from such a reorganization of the Commission, it goes without saying that it should and will equip itself with experts who are thoroughly trained in the different forms of transportation when it assumes jurisdiction over them.

On the fundamental proposition that Federal regulation of the various forms of domestic transportation should be concentrated and co-ordinated there can hardly be a serious difference of opinion. If these carriers are themselves to be co-ordinated into an orderly national system of transportation, their public regulation must also be co-ordinated. There must be some unity of purpose and planning, and plainly this cannot be expected from a series of special commissions each one of which sees only one phase of the whole transportation picture. Nor can it be accomplished in any effective way through some system of liaison committees or a supervisory overlord. Such methods are time-consuming and ineffective makeshifts. The obvious thing to do is to combine the regulation under one roof and under one head. This also is a problem which I believe we shall be able to work out, before we are through, to general satisfaction. I grant that foreign shipping introduces complications, and that careful consideration must here be given to the working out of a co-operative basis of regulation.

Port-to-Port Water Carriers No Distinctive Group

There seems to be a disposition on the part of some to argue that while public regulation may be needed for transportation in general, there is something special and distinctive about port-to-port water transportation which makes it a wholly inappropriate subject of regulation. Before the month is over I expect to make an address in which I shall deal more particularly with water transportation. For the present I may say that we have canvassed this matter with very considerable care, and find ourselves unable to make this far-reaching distinction. Nor do we believe that it is at all the general opinion among the water carriers that such a distinction should be made. Certainly it is not the view of most of the common carriers, and I confess that my sympathy runs strongly to those operators who do not pick and choose but hold themselves out to serve the general public. The tendency in recent years has been strongly in the direction of regulation, as witness the changes which have been made in the Shipping Board Act. Conditions are as unsound in the water carrier industry as in any other branch of the transportation industry, and they are in as much need of the controlling and restraining hand of the Government.

There are special situations in connection with contract and private water carriers which need more consideration than were given to them in my report last March, and which will require some amendment of the bill which was then submitted.

Contract Carriers

Objection has also been made to the provision which gives the Commission authority to prescribe the kind or kinds of commodities which contract carriers may transport. The effect of this provision may be unduly emphasized. It is, however, altogether unlikely that the Commission would prohibit, or unduly restrict, operations which are clearly of the contract type or unduly limit the kinds of commodities which a given carrier can transport. Exercise of the authority would tend to be limited to those special instances in which contract carriers get out of their distinctive fields of operation with harmful effects on carriers whose services are essential to the shipping public. For the Great Lakes and other contract carriers a minimum of regulation is provided, and it will not do violence to their special needs.

Then there is the commodities clause. It is agreed that this provision of the bill, as it was drawn, is very stringent. The past history of rail and water transportation indicates how disturbing a factor industrial ownership of transportation facilities can be. There may, however, be exceptional situations in which the public interest would not be prejudiced by allowing industries to continue to engage in the for-hire transportation business. I am prepared, therefore, to modify this provision to give the Commission discretionary power. I also believe that the period for divorcement of ownership could well be longer than the six months provided in the bill or be left to the administrative determination of the Commission.

These, however, are details. You may be sure that before I present the bills again for the consideration of the incoming Congress, they will be reviewed in the light of all the criticisms which have been offered, and such changes will be made as these criticisms seem to warrant. At that time my thoughts on the question of regulation of water terminals will also have taken definite shape. A further opportunity for the presentation of criticisms and the making of amendments will of course be given at such Congressional hearings as may be held.

Mind Quite Open on All Minor Points; Closed Only on the General Principles

On all these minor points my mind is quite open. It is closed only on the general principles. I see no escape from the conclusion that if we are to have the national system of transportation which will best serve the people of this country, the guiding hand of the federal government is needed to prevent these warring transportation agencies from doing unnecessary damage to each other, to encourage co-operation and co-ordination, to protect the interests of shippers and the general public, and to promote conditions of order and stability. I am gratified to find that the same conviction is now widely held by the carriers themselves, at all events by the common carriers, and by those who use their facilities. Once agreed on general principles I believe that we shall have no difficulty in getting together on the means of making them effective.

Fourth Section Relief Will Increase Revenues $27,388,530*

Railroads should be permitted to reduce rates to meet competition of intercoastal steamships

By Frank W. Robinson
Vice-President in Charge of Traffic, Union Pacific

THE ability of industry tributary to tidewater to market its products through the medium of lower transportation costs has compelled a relocation of interior manufacturing plants, which, prior to Panama Canal competition, had enjoyed a substantial business in the Pacific Coast area. While this situation may not be wholly controlling, it is significant, from figures taken from the manufacturer census, that within the nine middle western states, including Illinois and Missouri, the number of accredited manufacturing industries declined from 55,968 in 1919 to 37,174 in 1927, and that during a period when there was increased production and manufacturing.

This continuing diversion of traffic from the rail routes to the Panama Canal route throws upon the interior of the country a larger share of the burden of sustaining the railroads of the nation, and at the same time restricts its commerce. For instance, iron and steel articles produced in Colorado and formerly marketed in large volume in the states bordering the Pacific ocean now move to those states in much smaller quantities, having been driven out of the Pacific Coast markets by competition from the states along the Atlantic and Gulf coasts, from which points traffic moves at lower rates via the Panama Canal. Again, lumber produced near the Pacific Coast is moving in larger quantities via the Panama Canal route and is being marketed and distributed in increasing volume in states bordering the Atlantic seaboard.

In order to relieve the producers in the Middle West from this economic barrier that has arisen and enable them to regain their former markets on the Pacific Coast, the construction and extension of inland waterways is being agitated. This construction would cost the taxpayers heavily. On the other hand, if the transcontinental carriers were afforded the necessary relief from the Fourth section of the Act, those carriers would, without cost to the taxpayers, enable the distressed interior producers to recover their lost markets. In all of the years prior to the War, this is exactly what these railroads had been doing for the producers dependent upon their lines for access to coast markets. The only obstacle which prevents their doing so at this time is their inability to obtain Fourth Section relief for the protection of their revenues on other traffic not affected by water competition.

Flexibility of Price Will Attract Volume

The first heavy cost of a railroad plant marks it at once as an industry not only able but always under the necessity of employing flexibility in price making which will attract volume business and assure profitable operation by balancing its traffic and utilizing the plant to approximate capacity. Only about one-third of a railroad's total expenses is directly affected by taking on additional traffic, the remaining two-thirds being fixed charges which remain constant regardless of whether additional traffic is taken on or not, regardless of whether the plant is used to full capacity or not and regardless of whether the traffic is hauled for longer or shorter distances.

Railroad managements believe that the determination of whether or not rates are compensatory is a managerial function. If they are given opportunity to meet competition and the rates necessary will not give the railroads something more than out-of-pocket cost, the railroads are not under obligation to make them, nor would good judgment dictate that they should do so.

They ask that general recognition of the policy of affording the railroads relief under the Fourth section of the Act be established so as to give them equality of opportunity with the steamship lines. Under such a policy the Interstate Commerce Commission will be free to deal with changes in these rates in the same manner as in other rate changes.

It is also necessary, in order that stability may be given the rate structure, business confusion avoided through abrupt and radical rate changes, and railroads and steamship lines alike be assured of earnings necessary to provide a satisfactory service, that the steamship lines be brought under public regulation co-ordinated with that of the railroads.

Greater Burden on Remaining Traffic

The diversion to the canal of traffic formerly enjoyed by the railroads has put a greater burden of support upon the traffic remaining. The industries of the far West especially have to look to eastern sections of the country for their principal markets. The cost of transportation is, therefore, a factor of marked importance. The great perishable industries of the West require fast service on clock-time schedule in refrigerator cars. The industries of inland origin, producing lumber, minerals, grain, live stock and other farm products, which do not have opportunity to use the canal must also be given good service for average long distances to their markets. And in the opposite direction, there is a wide distribution of products of eastern manufacture in western territory not subject to water competition. This traffic east and westbound has to bear a much larger proportion of support of the railroads than would be the case if these railroads were able to secure a fair share of the traffic that has left them for the canal routes.

The operations of the railroads have also been made more expensive by the unbalanced movement, eastbound as against westbound, resulting in the movement of empty cars and the movement of locomotives westbound

* From a paper presented at a meeting of the Trans-Missouri-Kansas Shippers' Advisory Board at Kansas City, Mo., on October 11.

without loads, on a substantial scale. Regardless of the effect it may have, a sound public policy would not dictate that one form of transportation using only rails, or using rail and water combined, should not be given opportunity to meet the competition of another form of transportation which uses water exclusively.

The public opposition to the policy of the western railroads being given relief under the Fourth section has been largely from the intermountain territory which believed its business would be retarded by rail rates being made to meet canal competition without application at intermediate points. Railroad managements feel that this opposition is not sound. The question is simply whether or not the business shall move between ocean ports exclusively by water or whether it shall be shared by the railroads through meeting the rates of the steamship lines as nearly as may be necessary. A broader view and the one that would seem to be most logical is that increased expenditures in this intermountain section by the railroads through the return of traffic that they formerly enjoyed would be of marked importance in connection with the development of these territories and their merchandising industries, and that their production, which is the principal source of sustenance, would not then have to carry the increasing proportion of burden of maintaining the railroad service now placed upon industry of such nature or of such location that it does not have the use of the Panama Canal.

Commodities moving via intercoastal carriers include the entire list, except that the highly perishable Pacific Coast products have continued to move by rail and in all probability will continue to do so because of the necessity for specialized equipment and the marketing problems. This has thrown added burdens upon the transcontinental carriers, particularly those servicing California, because of the decreasing westbound movement of heavy non-perishable commodities, requiring an increased movement westbound of empty cars to loading areas. A typical illustration of this is afforded by the Southern Pacific whose figures are available and which show that in 1932 the revenue derived from the transportation of perishable products amounted to 40 per cent of the total of all carload freight revenues of the Southern Pacific, whereas in 1920 it amounted to only 13 per cent. While there has been a decline in total carload freight revenue in the depression, such decline in revenue has not been so marked in the case of perishable shipments.

The transcontinental lines, since 1920, have not been in position to compete fairly for this traffic. By this, I do not intend to convey the impression that to do so would require a duplication of the rates of the intercoastal carriers. Some allowance should properly be made for the superiority of rail transportation. In any event, the carriers in all probability could not justify, upon an out-of-pocket cost basis, rates as low as those maintained by the intercoastal operators. For this reason, the transcontinental lines have never felt that they were in position to compete for the port-to-port traffic but they should be in position to compete for it at interior points. For illustration, in my judgment, the rail carriers should be permitted, with Fourth Section relief, to meet the competition of the Pittsburgh-Buffalo area and supply those rates as maxima from the intermediate territory of origin, thus reasonably affording some protection to the interior manufacturers. Such an adjustment can be fully justified and the carriers would then be permitted to use a portion of their unused capacity at a price that would return some net to them. This would in turn not only benefit the carriers but all intermediate communities. There are many collateral advantages which would accrue to interior communities from such an application—some increased employment and in turn, better buying ability on the part of railroad employees and greater continuity of employment and ability of the rail lines to meet their tax problems, which latter consideration is of great importance to the states through which they operate and to which the water carriers are not contributors.

$27,388,530 Can Be Recaptured

To illustrate this point specifically, and using 1931 figures, the intercoastal lines handled 6,444,393 net tons of freight, excluding eastbound petroleum products. Of this amount, approximately 50 per cent, or 3,222,196 net tons, moved from port to port and would not be available to the railroads. Of the remaining 50 per cent, the railroads, under Fourth Section relief, should be able to secure half, or 1,611,098 tons, or at an average loading of 30 tons per car, 53,703 cars. At an average rate of approximately 85 cents per 100 lb., these 53,703 cars would yield $27,388,530 revenue to the rail carriers. This is a conservative estimate of the possibilities of recovering traffic and it would prove of great benefit to all interested directly or indirectly in rail transportation.

The objection of the interior communities or individuals to the relief to which the transcontinental lines feel they are entitled might have possessed some merit during a period when the competition may have been potential rather than real. That situation is not now existent and regardless of their theories as to the effect upon the intermediate territory, the fact remains that the situation complained of is in effect and at present beyond the control of either the intermediate territory or the carriers themselves because the steamship lines do handle these commodities. By no stretch of the imagination could the interior intermountain territories be injured if the rail lines should be permitted to share reasonably in this traffic.

The question resolves itself into whether the railroads are to be deprived of the opportunity of fairly meeting competition, or whether they are to be permitted to enter the field in an endeavor to regain at least a portion of that business to which they are entitled. It is inconceivable that any fair-minded person, with all of the facts before him, could decide other than that such an opportunity should be afforded.

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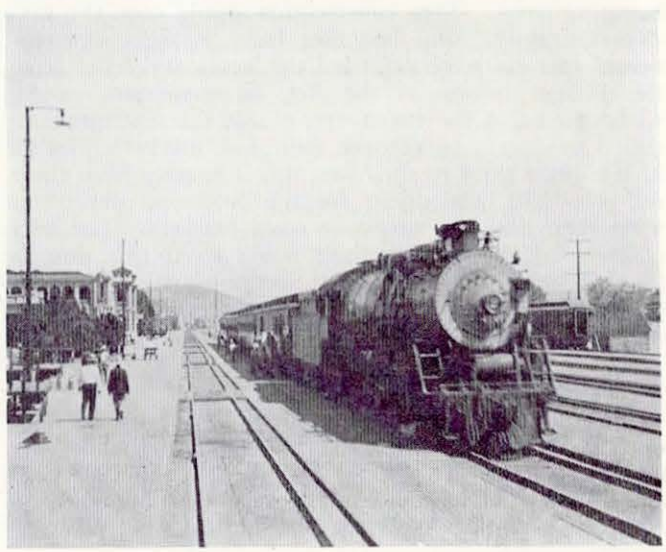

On the Atchison, Topeka & Santa Fe at Barstow, Cal.

Electrical Section Meeting

Abstracts from reports presented at Philadelphia session on October 25

HEREIN is concluded the report of the annual meeting of the Electrical Section, A. R. A. (now a part of the Association of American Railroads), which was held on October 25 at the Bellevue-Stratford hotel, Philadelphia, Pa. Abstracts from some of the reports and discussions were published in the *Railway Age* of November 10; other proceedings of the meeting are summarized below.

Application of Motors

The 1934 report is virtually a presentation of the report prepared in 1933. They were presented by C. G. Winslow, supervisor electric light and power, Michigan Central. The 1933 report is a clarification of electric motors, covering characteristics of single phase, polyphase and direct-current motors. A table is included to show what type of motor is best suited for the various services encountered in railroad practice. The committee's assignment for future work includes new developments in the motor field, possibilities of standardizing secondary voltages for wound rotor motors, motor control and power factor correction.

Discussion: Chairman Duer announced that the committee of direction had approved the committee's program and added industrial synchronous motors to the list of subjects to be considered in connection with power factor correction.

Clearances for Third Rail and Overhead Working Conductors

This report, presented by W. S. H. Hamilton, electrical engineer motive power and rolling stock, New York Central, deals with overhead clearance lines for permanent way structures on electrified railroads, clearance lines for equipment and permanent way structures adjacent to third rail and for third rail structures. It is also concerned with collaborating with other committees studying the subject of clearances.

Discussion: The principal point considered by the Association was minimum permissible clearances for overhead contact wires on electrified sections. This involves minimum distance between the tops of cars and the contact wire and minimum distance between the topmost wire and the rigid overhead structure. It was recommended that the future work of this committee include a report on existing practices.

Transfer of Inflammable Liquids

The report on transfer of inflammable liquids bears the title "Protection of Railroad Equipment from Danger of Fire Caused by Electric Sparks During the Transfer of Inflammable Liquids." It was presented by W. P. Monroe, Gibbs & Hill, Inc., Consulting Engineers. The 1933 report includes recommended practice for such protection, this protection consisting essentially of bonding together the stationary tank and the car during the loading operation. Where stray currents exist, special provisions are made for protecting the section of track on which the car stands. A modification is included in the 1934 report, which allows the use of filling hoses which are not lined with metal, but which can satisfy the requirement of an electrical connection between the nozzle and the storage tank. Mr. Monroe added that, since the report was sent to the printer, committee 13 of the railroad fire protective association had sent a letter requesting that the electrical section committee was to be co-ordinated with theirs, to include other carriers of combustible liquids.

Discussion: The question was asked if it was the intention of the committee to include Diesel-engine fuel. Mr. Monroe replied that inflammable liquids are specified as those which give off inflammable vapors below a certain temperature. Diesel fuel, he said, does not come under this definition. Mr. Winslow criticized the recommendation for No. 0 copper bonding wire. He said that it is unnecessarily heavy for carrying off static charges, and that in many cases smaller wires, not always copper, are used. The prime need, he said, is mechanical strength.

Illumination

The report of the committee on illumination, presented by E. R. Ale, foreman electrical department, Pennsylvania, describes recent developments in incandescent lamps and includes also a discussion of floodlighting for railroad yards. Among the new developments in lamps are the Mazda three-light lamp, having two filaments of different wattage rating, either or both of which may be energized to produce three different levels of illumination. Another new lamp is the Mazda Lumiline tubular-type lamp, so designed that it can be used to produce a practically continuous line of light. The report states that sodium and other light sources are being actively developed, but have not yet reached a point where they may be handled satisfactorily by untrained persons.

The report states that pre-focus lamps are showing satisfactory performance in applications and there is reason to think they last longer on rough riding equipment than the more solidly mounted screw base lamp.

Gratifying progress has been experienced with shock absorbing devices for application to headlight lamps. The report states that one large railroad has adopted such a device as standard equipment on all steam locomotives. It adds that, during the year 1933, with this device applied to passenger locomotives only, a saving of several thousand lamps was effected, and detentions due to headlight lamp failures en route were radically reduced.

Discussion: Mr. Ale asked if the association should continue to publish lamp schedules since they are elsewhere available. A decision was reached to eliminate the schedules from the report and to include reference to current schedules of ratings as published by manufacturers. Mr. Bebout stated that, in his opinion, the C5A headlight lamp was better than the C4 or the C5. In response to this, Mr. Ale said that several thousand lamps have been saved by the Pennsylvania by using shock absorbing devices and C5 lamps.

Mr. Hamilton asked for any data which might be

available on pre-focus lamps, since his road is considering their use to avoid crushed bases and to obtain more consistently good focus. Chairman Duer responded by stating that pre-focus lamps are used entirely on Pennsylvania multiple-unit cars and electric locomotives. This statement was amplified by Mr. Ale, who stated that the pre-focus lamp has been highly satisfactory in these applications. He said there is reason to believe that the pre-focus lamp has longer life than the screw-base lamp when used on rough riding equipment.

Design of Indoor and Outdoor Substations

The reports of the committee on the design of indoor and outdoor sub-stations were presented by J. S. Hagan, electrical engineer, Central of New Jersey. During the past few years, this committee has made unusually comprehensive and complete reports covering sub-station design. This work was brought to completion in the 1933 report, by covering the subjects: "A.C. Protection of Sub-stations," "Insulation Co-ordination," "High-speed Circuit Breaker Performance" and "New Apparatus Developments." The committee recommended that it be discharged and the subject discontinued, since it is expected no further information on sub-station protection will be available for a few years.

Discussion: Since the association evidently feels that new data on sub-station design will become available continuously, and does not wish to dispense with the services of this committee, the recommendation was not approved.

High Tension Cables

The work of the committee on high-tension cables was presented by H. F. Brown, assistant electrical engineer, New York, New Haven & Hartford. The 1933 report describes installations of 27,600-volt submarine cables laid under the East river and Wallabout bay in New York. Some of these cables are oil-filled and others are of solid construction. The report also mentions the installation of a large section single-conductor cable at 69,000 volts, in which the copper section is made up of several lightly insulated sections, in an effort to reduce skin effects. It is reported that, with existing installations, troubles during the past year have been minor. The 1934 report states that in the past year, a considerable amount of development work has been done but little new installation work has been completed. In presenting the report, Mr. Brown suggested that the committee should include in its considerations recent installations of a new type of conductor, known as Oilostatic cables, consisting of cables laid in steel pipes under oil pressure.

Corrosion-Resisting Materials

"Application of Corrosion-Resisting Materials to Railroad Electrical Construction" is the title of the report of committee 16, presented by R. P. Winton, welding engineer, Norfolk & Western. Several years ago, this committee placed samples of many different kinds of metal at three different points, where they would be subject to corrosive atmosphere. One of these sets was installed in a smoke jack at the Cedar Hill enginehouse, of the New York, New Haven & Hartford. A second set was placed on an overhead wire at Lambert's Point, Va., on the Norfolk & Western, where the samples are subject to exhaust gases and salt air. A third set was installed in Hemphill Tunnel, on the Norfolk & Western. The following statement appears in the 1933 report:

"In general, the bronzes have given very satisfactory performance. Some of the aluminum and phosphor bronzes shown considerable pitting and apparent losses of homogeneity near the surface. The aluminum samples, as will be noted from the photographs and tables, were not so satisfactory.

"In the ferrous groups, carbon steel, commercial steel and ingot iron show relatively higher losses. The copper bearing steels show slightly less loss and malleable iron still less loss. Some of the chrome and chrome-nickel steels show as low a loss of weight as some of the bronzes, but some of them showed considerable local pitting. The copper-nickel steel showed the lowest loss of any of the samples tested, but definite conclusions should be deferred until results from further tests of this alloy are known.

"It is impossible to judge the relative amount of corrosion by the appearance of the samples, but evidences of deep pitting should be taken into consideration with the average loss of weight. The loss of weight for one, two and three years' exposure seems to be reasonably consistent."

The 1934 report adds that samples of new materials have been added to those already under test. It further states that the loss of weight after four years' exposure was nearly proportional to the loss for three years.

Discussion: There was no discussion, but G. I. Wright, chief electrical engineer, Reading, stated that the work of the committee has aided materially in the selection of materials for use in overhead construction.

Power Contracts

The report of the committee on form of power contract for large blocks of power, presented by W. M. Vandersluis, general superintendent of telegraph and signals, Illinois Central, consists of a statement that the committee has worked with committee 20 on uniform general contract forms, in the preparation of form of agreement for the purchase of electrical energy in large volume. This form was presented to the association at the thirty-fifth annual convention of the engineering division, in Chicago, in March, 1934. The committee recommended that this assignment be discontinued. The committee was discharged with thanks.

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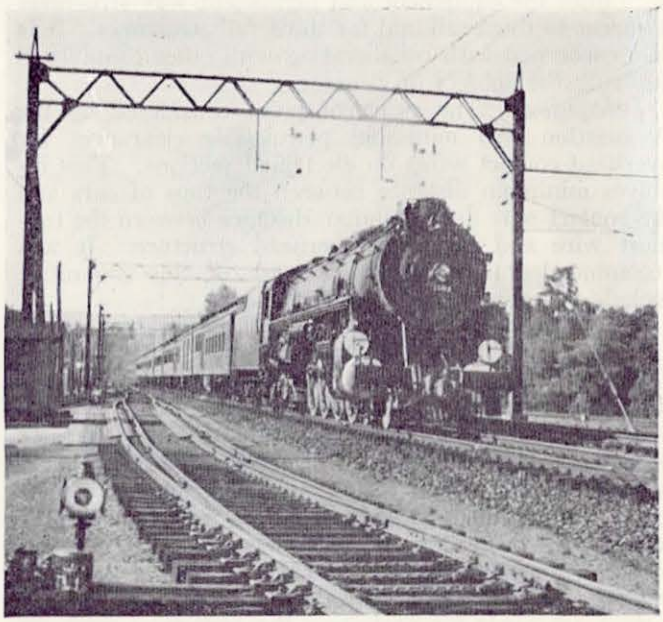

Photo by Paul T. Warner

On the D. L. & W., near Morristown, N. J.

State Commissioners Hold Annual Convention at Washington

Discussions reflect high degree of confidence that Congress, at next session, will enact legislation for the regulation of interstate highway carriers

WASHINGTON, D. C.

A HIGH degree of confidence that Congress at its next session would enact legislation for the regulation of interstate highway transportation was expressed at the forty-sixth annual convention of the National Association of Railroad and Utilities Commissioners held at Washington November 12 to 15. Motor vehicle legislation was one of the principal topics of discussion at the meetings, one session being devoted entirely to it, while other sessions were devoted to discussion of the Johnson bill, limiting the jurisdiction of lower federal courts in cases involving the validity of state commission orders, to valuation, and to the work of the Federal Communications Commission.

There was very little consideration of problems directly related to railroading and the changing character of the association since it was known as the National Association of Railway Commissioners, some years ago, was indicated by the fact that the constitution was amended to admit to membership the members of the Federal Power Commission and the Federal Communications Commission. To guard against any possibility of being outvoted by members of federal commissions, however, it was provided that, upon request of two states, voting should be by units, so that a federal commission would have but one vote, the same as a state commission.

The need for motor vehicle regulatory legislation was urged by W. E. Lee, chairman of the Interstate Commerce Commission, in an address of welcome and the discussion of the subject was introduced by an informal talk by Joseph B. Eastman, federal co-ordinator of transportation, in which he said he would again present the recommendations he had made to Congress last year and that he was in hope that something would be accomplished at this session, because sentiment in favor of regulation is steadily increasing. Kit F. Clardy, of Michigan, chairman of the committee on legislation, also expressed the opinion that in the next session of Congress "the stage will be well set for the enactment of that sort of bill," and he said that the bill will be one that the state commissions want because Mr. Eastman had adopted their recommendations and that "the co-ordinator's bill and the Rayburn bill (on which bearings were held at the last session) are one and the same."

Chairman Lee of the I. C. C.

Chairman Lee of the I. C. C., recalling that at the 1932 convention of the association he had strongly urged the enactment of legislation necessary for the regulation of motor vehicles operating in interstate commerce, said that with the increased development of these unregulated agencies and the experience and information gained during the past two years, he was more convinced than ever that such legislation is necessary, although he expressed the opinion that the regulation of their competitors will not restore to the rails the traffic they have lost.

"Many who then felt that it was soo soon for regulation of these transportation agencies now urge it," he said. "In the commission's letter transmitting the co-ordinator's report and recommendations to the Congress, we expressed the judgment that it was imperatively necessary, under present conditions that the recommendations be enacted into law.

"Considering the appalling loss of life and injuries caused by motor vehicle traffic on the highways, I believe it is of paramount importance in any scheme for the regulation of such carriers that the utmost consideration should be given to this subject. I am firmly of the opinion that there should be legislation that will bring about a proper restriction of the length, height, width, and weight of motor vehicles, a limitation of the number and size of trailers, and—probably the most important of all—a requirement that only qualified and experienced drivers be permitted to operate properly equipped and regularly inspected motor vehicles, under limitations of reasonable hours of service.

"Touching briefly on the matter of rates, it has never been my view that the rates of one transportation agency should have a direct relation to the rates of another. It is not sound in principle. The railroad rate between two points should be only one of a number of elements, and in no wise a controlling one, to be considered in determining a fair, reasonable and non-prejudicial motor vehicle rate between the same points. Where all carriers are under regulation, and by that I do not mean the same kind of regulation or to exactly the same degree, rates cannot be made with a view to holding traffic to any one type of transportation.

"I would not be frank, however, if I did not tell you that, in my opinion, and in these remarks I speak only for myself, the regulation of their competitors will not wholly cure the ills of the railroads. They are suffering primarily from a scarcity of traffic, and the regulation of motor vehicles and water lines will not restore to the rails the traffic they have lost. The justification for the regulation of these so-called competing forms of transportation is on other grounds: The stability of motor vehicle and water charges, dependable service, the prevention of discrimination between persons and places, the elimination of unbridled competition, and a determination of fair and reasonable rates. It is important, however, for the country to understand that while the ills of the railroads cannot wholly be cured by legislation, their recovery can be materially hindered and prevented by unwise legislation. I do not refer to emergency legislation; I am taking a long range view. In my opinion the national transportation program should be confined to the proper regulation of all forms of transportation.

When this has been accomplished, with the return of conditions to a state of normalcy, the proper field for each form of transportation will have been determined, and out of the present confused competitive scramble there will have emerged a logically co-ordinated system of national transportation.

"Time will not permit further reference to the proposed regulation of water lines, but the views I have expressed, more particularly with reference to motor-carrier regulation, I believe, in general, are sound with respect to the regulation of water lines.

"The question of the regulation of motor vehicles has been a leading subject of discussion for at least ten years, and of water carriers even longer. Let us hope that out of all this discussion some direct result will soon be accomplished; that it will not be as Mark Twain said, that there seemed to be much talk about the weather, but nothing was ever done about it."

Co-ordinator Eastman

Mr. Eastman spoke along the lines of several of his recent speeches, describing his efforts to develop ways for improving the service of the railroads and eliminating competitive wastes. He said that failure to secure the traffic available is just as much a waste as spending unnecessary money, but that he had great hopes for the future of the railroads after the transition period because they have so great an advantage in cost over other vehicles where long-haul transportation is concerned. He pointed out that while the trucks handle only about 10 to 12 per cent of the ton-miles handled by the railroads they employ probably more men and said that this gives an idea of the relative labor cost. He said the railroad rate structure, including as an important factor the "value of the service," had given the trucks an opportunity to encroach on the higher-rated traffic and that it is clearly necessary to revise the structure in many respects as well as to simplify it. He was glad to see that the new association formed by the railroads, with greater authority than had ever before been conferred on such a body, had created a Traffic Department and hoped that it would be able to study the rate structure from a more independent and detached point of view than has heretofore been possible, "for it certainly needs attention."

The discussion was participated in by Jesse W. Greenleaf, of Kansas, Albert J. Stearns, of Maine, Ernest E. Blincoe, of Kansas, and Homer Hoch, of Kansas. Mr. Blincoe described the operation in Kansas of the uniform motor vehicle act adopted by the association saying it had been very successful in many respects and that he hoped it will be given further attention by the states with a view to ironing out existing differences in regulatory methods. Mr. Hoch also described the operation of the Kansas port of entry law, under which trucks entering the state from outside are stopped at one of the 65 "ports" for inspection and payment of the state ton-mile tax. He said the early friction had largely disappeared and that the law was now working smoothly and has made "an outstanding showing." He said many other states are now considering the enactment of similar laws.

The Special Committee on Motor Vehicle Legislation, Robert H. Dunn, of Michigan, chairman, recommended that the association continue to advocate the enactment of such legislation as will provide for the regulation of transportation for hire by motor vehicle and that the type and character of the regulation should be that reflected in the Rayburn and Dill bills and the bill drafted by the co-ordinator. "If there ever was a need in the past for proper regulation of interstate motor vehicle operation," the committee said, "there is all the more need for the same at the present time. Not only does this committee feel that there is a need for such regulation for the sake of transportation itself and the public as well, but it believes that the creation of the same not only will go a long way toward solving our transportation problems, but also will insure and assure a much earlier return of prosperity."

The Committee on Railroad Grade Crossings, Elimination and Protection, L. G. Godley, New York, chairman, proposed a resolution placing the association on record as recognizing "the widespread need for grade crossing elimination and protection as a matter of highway safety, and the desirability of large outlays for this purpose as a matter of expeditious unemployment relief" and as favoring the allocation of the money so that it may be expended under the supervision of the departments of the states having jurisdiction or direct to the project. The report said that a movement is now under way to secure a further allocation of P. W. A. funds for grade crossing eliminations, which it is stated will provide 9,000,000 man-months for relief work, but that "little attention has so far been paid to the machinery of applying the appropriation, since the suggestion is largely in an embryonic stage." It pointed out that despite the obvious need for an increased program of grade crossing elimination, most of the states have not the available cash or credit and that "the railroads are in a similar condition and as a rule cannot be expected to participate financially at all, if early unemployment relief and early stimulation of recovery are to be the main consideration."

The association adopted a resolution stating that the separation of grades is, under existing economic conditions, "a financial burden greater than the railroads and/or the several states, municipalities and political subdivisions may, at this time, properly undertake upon a nation-wide scale" and urgently commending to the consideration of the President "the desirability of immediate appropriation, out of funds made available by the Congress, of substantial sums to be expended in the several states, for the purposes above set forth, upon such projects as may be recommended and approved by proper federal and state authorities." The president of the association was directed to appoint a member to serve with him and the first vice-president as a committee to transmit the resolution to the President.

The Committee on Valuation presented a report embracing a summary of some of the major developments during the past year in the field of valuation, including a review of decisions of the Supreme Court and the principal decisions of the lower courts, and a statement showing the status of federal valuation of railroads carried on by the Interstate Commerce Commission under the reduced requirements of the amendment to the law enacted last year. E. I. Lewis, director of the Bureau of Valuation of the commission, who led the discussion on this subject, presented a tabular summary of the commission's original valuations, made as of dates ranging from June 30, 1914, to December 31, 1921, as well as of the later valuations as of 1927 and 1928 of certain properties that came into existence or acquired a common-carrier status after the closing of the original inventorying work. The summary had been prepared responsive to requests that there be brought into convenient form a summary of reports scattered through many volumes of the commission's reports. Mr. Lewis also explained in detail how the valuation data is being brought down to date in accordance with the amended law which requires the commission to keep itself informed of changes in the property, cost and investment, so that it will have available at all times the informa-

tion necessary to revise and correct its previous inventories. For many roads such data is available down to the beginning of this year. Mr. Lewis also explained the methods by which price indices and price trends are calculated and used in bringing earlier data, based on costs as of the period 1910 to 1914, down to date.

The totals of the valuation figures as of the various dates up to 1921 showed a total final value of carrier property used of $16,493,637,588 and working capital amounting to $431,919,400. The total for the investment in road and equipment column, as of the corresponding dates, was $18,954,806,466.

At the banquet on Wednesday evening the speakers were Commissioner B. H. Meyer of the I.C.C., and Representative Sam Rayburn of Texas, chairman of the House committee on interstate and foreign commerce. Mr. Rayburn advocated regulation of motor transportation by the Interstate Commerce Commission and opposed the suggestions that have been made for the creation of a Secretary of Transportation, saying in part:

We cannot afford to throw the regulation of transportation into the maelstrom of party politics. A freight rate is neither Democratic nor Republican. The determination of what it should be in order to be lawful frequently involves mixed questions of law and of fact. To determine these questions, to adjudicate the claims of shippers, to fix rates for the future, requires the highest qualities of mind and of character. Those who carry these responsibilities must be left free to exercise their best judgment, and they must be equipped with all the resources of expert and technical assistance necessary to gather and analyze information. It would have been a great mistake to have placed the regulation of transportation in an executive department. The members of Congress would have been daily annoyed with the request to see the appropriate member of the Cabinet with reference to reparation on some shipment of scrap iron or on rates or on any one of the thousands of rates that are published from time to time. In my judgment, it would be a great mistake to create any agency which would in any way duplicate or interfere with the work of the commission. I have heard some advocate that we should set up new commissions to regulate the more novel agencies of transportation. Personally, I am not in favor of creating a new commission, or new commissions, for that purpose. I believe that we have an organization that is thoroughly competent to do whatever Congress wants done to regulate transportation. It may be necessary to add to the staff of this or that or the other bureau with the increase in the volume of the work, but I believe that eleven men will make the decisions more promptly and in a more satisfactory manner than twenty.

I have yet to be persuaded that Federal regulation of motor vehicles will require any large addition to the personnel of the commission. As I have listened during the past several years to the witnesses who have appeared before the committee on interstate and foreign commerce to discuss bills to regulate automotive traffic, I have been impressed by the large percentage of such traffic as moves relatively short distances. I believe that the regulation of busses and trucks is for the most part the responsibility of the respective states. Proper measures to protect the highways in which Federal money is invested, to insure safety on such highways, and to prevent undue waste in the use of facilities on interstate commerce will, in my judgment, correct most of the abuses complained of in the hearings before the Congressional committees. To administer such an act will not, in my judgment, require a single additional commissioner, much less a whole commission.

I doubt if Congress will find it necessary to project its will into the management of the carriers in order to bring about desired economies. The railroad managements themselves are organizing with a view to responding to the revelations of the two years' survey of their activities which was authorized by Congress. They are adapting their trains to modern requirements for speed and comfort, are making ever-increasing use of containers, and are manifesting a reawakening of the old pioneer spirit which drove the railway builders of the past generation to triumph over what appeared to be insurmountable difficulties.

I have not been persuaded that the present condition of transportation requires any grand new scheme of regulation. We, at present, have more transportation facilities than the country needs, but that is no reason for scrapping a part of the plant. It is the business of this generation to use common sense and conserve the vast investments of capital which have been permanently committed to transportation—to preserve these highly specialized forms of capital from deterioration, for in time the commerce of the country will require every facility we have and even further expansion. Some economists want us to abandon and scrap thousands of miles of railroad and to legislate vehicles off of the highways now in existence. I regard such suggestions as the counsel of folly. My position is that government is never justified in legislating a competitor out of business. It is, however, the duty of government to see that the competitor is placed under reasonable regulation.

Having more highways and railroads and more equipment on each than is being used profitably, we must show good judgment in order to maintain the plant that is the capital investment. Grand schemes of consolidation will not lessen the size of the plant. The creation of federal commissions will not add tonnage to be carried either on the railroads or on the highways. Regulation can prevent the pounding to pieces of the highways by vehicles that are too heavy or too heavily loaded. Regulation can prevent in interstate commerce the effort of over-optimistic promoters to carry goods and passengers on the highways for distances that are longer than experience demonstrates to be profitable. Regulation can require carriers on the highways to use proper precautions for safety and to be financially responsible to meet each and every obligation. Regulation can prevent cut-throat competition among the operators of motor vehicles as well as among the operators of the railroads. Regulation by state and federal authorities can require the publication of reasonable rates, but a rate that is reasonable and fair to one type of transportation may not necessarily be reasonable for another agency. Government can permit the managements of transportation companies to coordinate the use of the different agencies so as to give the shipper the benefit of store-door pick up and delivery, speed and safety resulting from an intelligent use of both highway and railway facilities.

I believe that the initiative and the resourcefulness of our people will find expression in the management of our transportation companies. It is not necessary for the government to become a heavy investor nor to become involved in management. The government has enough to do to provide proper regulation in the interest of fairness and justice as between groups of carriers and shippers.

Andrew R. McDonald of the Wisconsin Public Service Commission was elected president of the association for the ensuing year; F. P. Morgan, of Alabama, first vice-president; and Thomas E. McKay, of Utah, second vice-president. John E. Benton, Washington, D. C., was reelected general solicitor, and Clyde S. Bailey, Washington, D. C., who has been assistant secretary and assistant general solicitor, was elected secretary, succeeding James B. Walker, of New York, who is retiring after 18 years. James L. Martin, of the District of Columbia Public Utilities Commission, was elected assistant secretary.

R. B. A. Appeals to P.W. A. for Grade Crossing Funds

IN a statement by Harry A. Wheeler, president of the Railway Business Association, that association appeals to the Public Works Administration for funds to eliminate grade crossings which will provide large scale employment and reduce accidents. In his statement Mr. Wheeler said:

"The administration is now developing its program for relief expenditures during the coming year. Considering the magnitude of the operation, it is imperative that the maximum value be obtained for the money spent. To that end, the Railway Business Association is again earnestly asking the Public Works and Relief Administrators to allocate funds for elimination of railroad grade crossings as a make-work measure and as a step toward the reduction of the gigantic toll of human life taken in this age of speed.

"Interstate Commerce Commission figures reveal that grade crossing accidents have cost the lives of 4,847 persons in the last three years and have resulted in injuries to 12,343 persons in the same period. It would

appear that this total compels recognition of this condition as a federal problem to which the administration might address itself from a three-fold standpoint: (1) Reduction of deaths and injuries; (2) Creation of jobs through expenditures of funds on work of a public character in which the cost of labor constitutes more than half of the total outlay, according to official estimates; and (3) Absorption of some of the burden now placed on the railroads—a burden that the Interstate Commerce Commission, the Federal Co-ordinator of Railroads and the National Association of Railway and Utilities Commissioners have recognized as being an unfair charge against the railroad corporations as now apportioned by most of the states.

"There are 237,000 rail-highway grade crossings in the United States of which only 31,000 are specially protected. Obviously, a large part of the remainder demand no grade crossing separation, but the imperative cases constitute a program of great magnitude and it would seem that the problem is no longer a question with which the railroads themselves must deal or bear the expense of correction.

"Fantastic as it may seem, approximately twenty per cent of the grade crossing accidents were occasioned by the highway vehicle running into the railroad train and only yesterday, in confirmation of this, a farmer's truck in Nebraska rammed the new Burlington Zephyr while it was moving thirty-five miles an hour on its trip from Kansas City to Lincoln.

"The Class I railroads of the country were forced to spend and to charge to capital account $130,000,000 for the elimination of grade crossings between railroads and highways in the period 1929 to 1931 and in the same period $160,000,000 additional was spent for maintenance and crossing protection. It is to be remembered that this expenditure is of the non-productive kind. No return ever is received by the rail carriers, but they constitute an item of capital charge and of charge against current income which the carriers must absorb as a part of the service to the public under present national and state policies.

"The cost of grade crossing elimination and protection is growing continually more necessary and its cost is by no means allocated to the public and the railways in proportion to the benefit derived. While the administration is considering means of helping the unemployed we ask why at the same time it may not allocate funds that will serve the triple purpose of making work, providing for public safety and some measure of relief for the steam transportation systems.

"The Public Works Administration or the Federal Emergency Relief Administration has authority in law to proceed. Section 204 of the National Industrial Recovery Act calls for the expenditure of four hundred million dollars for emergency construction of public highways and related projects. Among these items is '. . . the separation of grades at crossing, the reconstruction of existing railroad grade crossing structures, the new location of highways to eliminate railroad crossings.'

"In view of all of these factors, this association takes the position that the administration should examine the records which it has available or can have available upon request, to determine whether expenditures that will save lives and property, increase work, and relieve some of the financial strain upon the railroads, is not an advisable policy to adopt. We do not attempt to say how much should be earmarked for this purpose. The government has ample data upon which to base its calculation. Whatever sum is allocated, however, will be well spent and of lasting value."

Hearings on Ex Parte 115

HEARINGS on the carriers' applications for increased freight rates ex parte 115 were held at Birmingham, Ala., and Fort Worth, Tex., on November 7 and at San Francisco, Calif., on November 9. Shippers testified at these hearings to show the effect of increased rates on their businesses.

Commissioner Hugh M. Tate presided at Birmingham, assisted by Examiners Martin Walsh and Myron Witters. Witnesses appeared for the peach growers, the brick and tile industry, the Louisiana Highway Commission, Florida shippers and receivers, coal operators, cement and coke manufacturers, the Florida Highway Department, the Manufacturers Association of Jacksonville, and others. According to W. C. Bewley, representing the Peach Growers Association of Georgia, and 200 independent peach growers of that State, Georgia peach growers last year lost an average of $43.89 a car on that part of the crop shipped to market by rail, and motor trucks handled the equivalent of 2000 cars, an increase of 500 cars over the year before. W. E. Dunwoody, president of the Standard Brick and Tile Company, Macon, Ga., testified that the proposed increase of one cent a hundred pounds, the equivalent of 50 cents a thousand on brick and tile, was more than the industry could stand. John O'Rourke, representing the Miami Rate and Traffic Association, said that in the season of 1930-31 the railroads handled 72,949 cars, or 90 per cent of the total shipments of citrus fruits; boats handled, 1,696 cars, or 2.5 per cent, and trucks handled, 8,000, or 7.5 per cent, while in the 1933-34 season the railroads handled only 32,288 cars, or 69 per cent; boats, 21,023, or 20.7 per cent, and trucks, 9,025 cars, or 10.3 per cent.

At the hearing at Fort Worth, Commissioner Charles D. Mahaffie presided. The petition of Texas truck interests who have asked the Commission and the State commissions to deny the exception of the railways' application to hauls of 200 miles or less, and to grant an increase in their rates, was heard on November 13. The Texas Commission consolidated with its docket No. 3314 an application of the Common Carrier Motor Freight Association, Inc., of Texas, which seeks increases in motor truck rates on traffic up to 200 miles, which traffic was omitted from the railroads' petition. According to J. D. Hughett, who filed the truck petition, the increase is necessitated not only by increased costs in insurance, workmen's compensation, petroleum products and tires, due to the operation of various codes, but because the shorter haul traffic was purposely omitted from the rail petition so that the truckers would not participate in any revenue increase, the Texas commission having ordered that the rates for all common carriers be maintained on the same general level. The petition says that in case the rail petition is granted without increases in the short-haul rates, the common motor carriers in Texas will be in a very critical situation. In that case, the petition continues, the railroads' answer to a separate petition by the motor carriers would be a statement that the railroads have sufficient revenue already from their previous increase and do not desire further increase.

Commissioner Clyde B. Aitchison and Examiner B. E. Stilwell conducted the hearing at San Francisco. Opposition to any increase in freight rates was voiced by the California Farm Bureau Association, the California Cattlemen's Association, Western Growers Protective Association and others.

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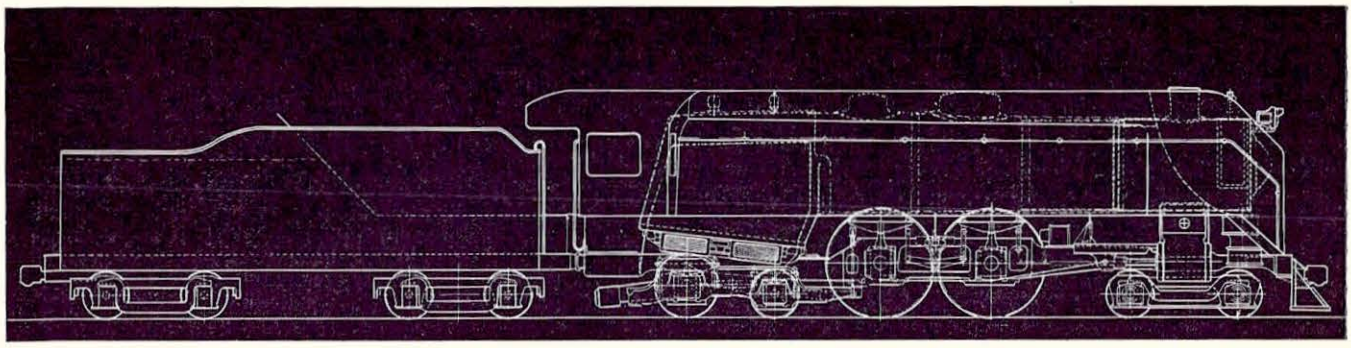

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Court Hears Complaint in C. & E. I. Rerouting

THE bill of complaint filed by the New York Central and the Louisville & Nashville against the United States, challenging the power of Joseph B. Eastman, federal co-ordinator of transportation, in forbidding the diversion by the Louisville & Nashville of its Dixie trains from the Chicago & Eastern Illinois between Evansville, Ind., and Chicago to the Cleveland, Cincinnati, Chicago & St. Louis and the New York Central, was heard by three federal judges sitting en banc in the District Court at Chicago on November 13. The judges, Evan A. Evans, John P. Barnes and Phillip L. Sullivan, took the case under advisement, ruling that the contestants shall within five days file lists of the cases cited as precedents and that if any of the contestants wish, they may file briefs within that period. Leslie Craven, counsel for the federal co-ordinator of transportation, announced that if it were in the interests of the court, the federal co-ordinator would extend his order which was to become effective on November 14, for a period of 10 days. The court asked that this be done.

The plaintiffs in the case were the Louisville & Nashville, the Cleveland, Cincinnati, Chicago & St. Louis, the New York Central and the Nashville, Chattanooga & St. Louis. The defendant was the United States of America. However, interveners as defendants were the Chicago & Eastern Illinois, the bondholders protective committee of this railroad, and Joseph B. Eastman, federal co-ordinator of transportation.

Arguments in the case centered around the power of the co-ordinator to issue orders, the right of contract and administration. Fitzgerald Hall, vice-president and general counsel for the Nashville, Chattanooga & St. Louis, argued that there was no contract, rule, practice or law which inhibited the L. & N. from making the change; that there is no intent on the part of the plaintiffs to close any route; and that there is no change contemplated, so far as the plaintiffs are concerned, in tariffs or in the method of selling tickets and checking baggage. Besides contending that the Co-ordinator's report contains many inaccurate statements of facts and omits many facts of unquestioned pertinency fully proven, he contended that the Co-ordinator's order was issued without proper hearing and contrary to the findings of the regional committees. He asserted that the Co-ordinator had no power to sit in review of the action of the co-ordinating committees and substitute his opinion and judgment for theirs. He argued that the plaintiffs have the right to contract with each other and other railroads to render better public service and to improve their revenues as proposed, this right being protected by the due process clause of the Fifth Amendment, and that the order of the Co-ordinator denying them this right of contract is, therefore, void.

Injunction Sought

He further contended that the Co-ordinator had no power or jurisdiction under the Act of Congress known as the Emergency Transportation Act of 1933, to issue this order, because it relates to a matter submitted by him to the three regional co-ordinating committees for consideration and action, and because these committees met to consider fully the matter submitted and by unanimous vote took action specifically approving the proposed plan; that the Co-ordinator did not consider all the testimony presented before the regional co-ordinating committees, because a transcript of the evidence was not taken down; that his action under these circumstances constitutes an arbitrary and illegal act so that his order under these conditions violates the due process clause of the Fifth Amendment of the Federal Constitution; that his order, being without support of any legal evidence, is null and void under the due process clause of the Fifth Amendment to the Constitution of the United States; that his order prohibiting the withdrawal from a contract terminable at will and forcing plaintiffs to continue contractual relations violates the constitutional right of private contract, is directly devoid of statutory basis and is, therefore, illegal under the Fifth Amendment; and that the power sought to be exercised by the Co-ordinator is the power of an owner.

He asked that a preliminary or interlocutory order or injunction be entered suspending the enforcement of the order until the final determination of the cause, and that upon the final hearing a decree be entered perpetually enjoining the enforcement of the order.

Elmer B. Collins, special assistant to the attorney general, representing the government, argued that the plaintiffs had refused a hearing before the Interstate Commerce Commission and, therefore, should not be permitted to avoid the administration process by trying their case in the district court, which, because the order issued by Mr. Eastman was not a final order, had no jurisdiction in the matter. He argued that the Act of Congress created the position of Federal Co-ordinator of Transportation and that the Co-ordinator must have some latitude. He contended that the Co-ordinator made the order without a hearing but without depriving the plaintiffs of the opportunity of a hearing before the order became effective. The Co-ordinator, he said, construed the statute as requiring him to decide and to issue an order which would not become final until 20 days, and not then if cause was shown that the order should not become final. He charged the plaintiffs with endeavoring to make the order final by carrying the case to the district court, but contended that such action would not make the order final, since no order can become final until it is submitted to the Interstate Commerce Commission.

Co-ordinator Would Be Stripped of All Power

Leslie Craven contended that this is the first order of the Co-ordinator and if the position of the plaintiffs is maintained, the action will strip the Co-ordinator of all power and render him unable to carry out the intention of the act. In reply to the plaintiffs' contention that the co-ordinating committees had acted, Mr. Craven contended that mere deliberation or discussion did not constitute action. He also contended that the Co-ordinator had to act because the discontinuance of an existing route was involved, subject to Clause 1 of Section 4 which prohibits the abandonment of service.

Ernest S. Ballard, in presenting the brief of Charles M. Thomson, trustee of the Chicago & Eastern Illinois, argued that the order sued on in this case is not final, does not take effect until November 14 and until that date any party in interest may petition for and secure from the Commission a review and suspension of the order. The suit, he contended, is premature and without sanction in law, inasmuch as the United States has not consented to be sued at this time or on an order of this character.

He also contended that there are certain principles universally recognized that control the court's discretion. One such principle is that an injunction will be refused where for any reason it can be of no benefit to the plaintiff and cannot correct the situation complained of. The injunction issued by Judge Barnes in the bank-

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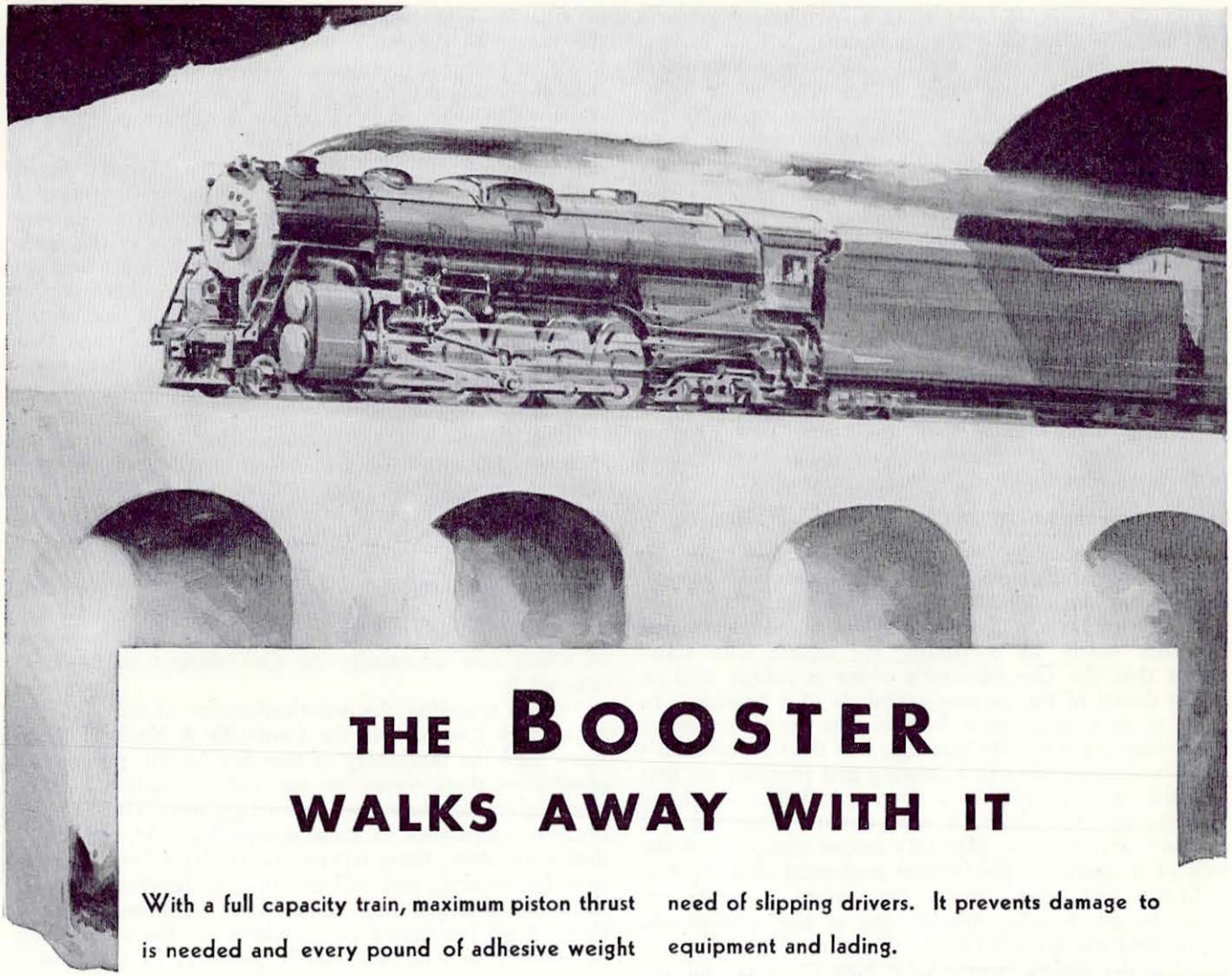

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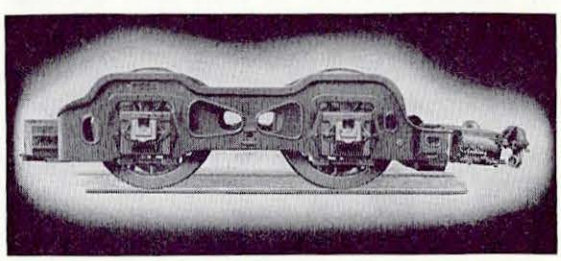

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ruptcy case prevents the plaintiffs from doing the acts prohibited by the Co-ordinator's order. That injunction is presently in effect and, by its terms, continues in effect until the further order of the court in the bankruptcy proceeding. No move has been made by the plaintiffs, against whom the injunction runs, to bring about its dissolution either by further proceedings in the trial court or on appeal and, so far as present appears, the plaintiffs' hands will be tied with regard to the subject matter here under consideration, whether or not the Co-ordinator's order is enjoined. In these circumstances, a preliminary injunction will not issue.

In addition to the fact that the injunction in the bankruptcy proceedings would preserve the status quo regardless of the Co-ordinator's order, there is the further obstacle to the relief here sought that the direct mandate of the Emergency Railroad Transportation Act of 1933, prohibiting the elimination of any routes now existing without the consent of all participating lines, or an order of the Co-ordinator would have the same effect.

Plaintiffs Failed to Avail Themselves of Hearing

He also contended that the findings of fact on which the Co-ordinator's order rests are conclusive because the plaintiffs have failed to avail themselves of the right to a hearing which the statute accords. The bill and plaintiffs' briefs, he continued, are replete with statements that the Co-ordinator's order is infirm because of the denial of the various essentials of a hearing. In reply to these statements, he said that the Co-ordinator is not authorized to hold hearings, that the Co-ordinator's order was made without a hearing and properly so, that plaintiffs were entitled to a hearing had they sought it, that through the plaintiffs' own default a hearing was not had, and that the plaintiffs cannot complain of the lack of a hearing. He further contended that the Co-ordinator had power, under the statute, to make the order in question because he was of the opinion and found that the committees should have taken or recommended the action required by him to carry out the purposes of the statute.

What Did Congress Intend?

The entire problem, he continued, is simply this: "Did Congress intend that a decision by a regional committee, to the effect that the purposes of Section 4 (1) were not being violated in a particular case, should be final, or did it intend that the Co-ordinator should have power to act despite such decision? The history of this legislation in Congress demonstrates that Congress recognized the unwillingness of the carriers to eliminate wasteful practices in some cases and that it intended to create machinery under which the elimination of such practices could be compelled. To leave these matters entirely to committees selected by the carriers, with the Co-ordinator acting merely as an assistant to such committees, would defeat that intent. The statement of Senator Dill that the committees are to assist the Co-ordinator and the statement of Mr. Rayburn that the Co-ordinator has power to go over the committees clearly demonstrate that the Co-ordinator was intended to have power to determine for himself whether, in a particular case, the purposes of Section 4 (1) are being violated, and to act to compel the fulfillment of those purposes if the committees themselves do not do so.

"Section 5 makes it the duty of the committees selected by the carriers to attempt to accomplish the purposes of section 4 (1) by voluntary action of the carriers, failing which, section 5 imposes upon the committees the duty to recommend to the Co-ordinator that he enter an order. Section 6 gives to the Co-ordinator the power to determine whether the committees have failed to perform the duties imposed by section 5 and, if he finds that they have so failed, to compel the carrying out of the purposes of section 4 (1) by an order to the carriers.

"In the present case, the committees have not acted within the meaning of section 6, for the action referred to in that section is action under the provisions of section 5. All that the committees have done in this case is to determine that they should not act under section 5. Section 6 expressly gives to the Co-ordinator power to determine whether the committees should have acted under the provisions of section 5 and he has found that they should have. It follows that the order here complained of is within the powers granted to the Co-ordinator by the statute.

"The attack on the constitutionality of the order is in reality an attack on the constitutionality of the Act. This is so as to the precedural objections because the act requires no hearing in advance of promulgation of the order. It is so as to the other objections because they are based upon the effects of the order on the plaintiffs' property rights and their rights of contract. In these respects the effect of the order would be the same, even if the committee had recommended the order, in which case admittedly the Co-ordinator might have entered it.

"While attacking the constitutionality of the Act, the New York Central and the Louisville & Nashville both have used the machinery of the Act for the purpose of placing on their respective regional committees as representatives of their own choosing, men who are officers or employees of those companies. As such committee members, these representatives have been and are now functioning, and will continue to function, as part of the machinery set up by the Act. Representatives of these lines functioned as members of the committees in connection with the matter involved in this case."

New Book . . .

Southwestern Freight Rates, by Theodore A. Fetter. 151 pages, 8 in. by 5½ in. Bound in cloth. Published by the Christopher Publishing Company, Boston, Mass. Price $2.

This book is a study of the growth of the freight rate structure in the Southwest or the area in which traffic is controlled by the Southwestern Freight Bureau. It was prepared originally as a thesis and was accepted in 1931 in partial fulfillment of the requirements for the degree of master of science in business administration at Washington University. It is probably the only available study of any rate structure based on research in traffic records.

While the book traces the development of rates and regulation in this territory, it also pictures the fight of Gould and Huntington for control of the new route to the Pacific prior to 1885. The story takes an added interest today when viewed as a part of the larger problem of government regulation of business.

This story of the southwestern rate structure is divided into two distinct parts; the first covering the period of unrestricted competition between rail and water carriers, and the second dealing with the more recent period of increasing regulation of rates by state and federal authorities. The author traces rates and their regulation, touching upon the Gould and Huntington treaty of 1881, the Railroad Commission of Texas in the '80's, the formation of the Texas Traffic Association in 1885 and others which controlled rates. He also discusses export grain rates, fourth section rates and various rate cases.

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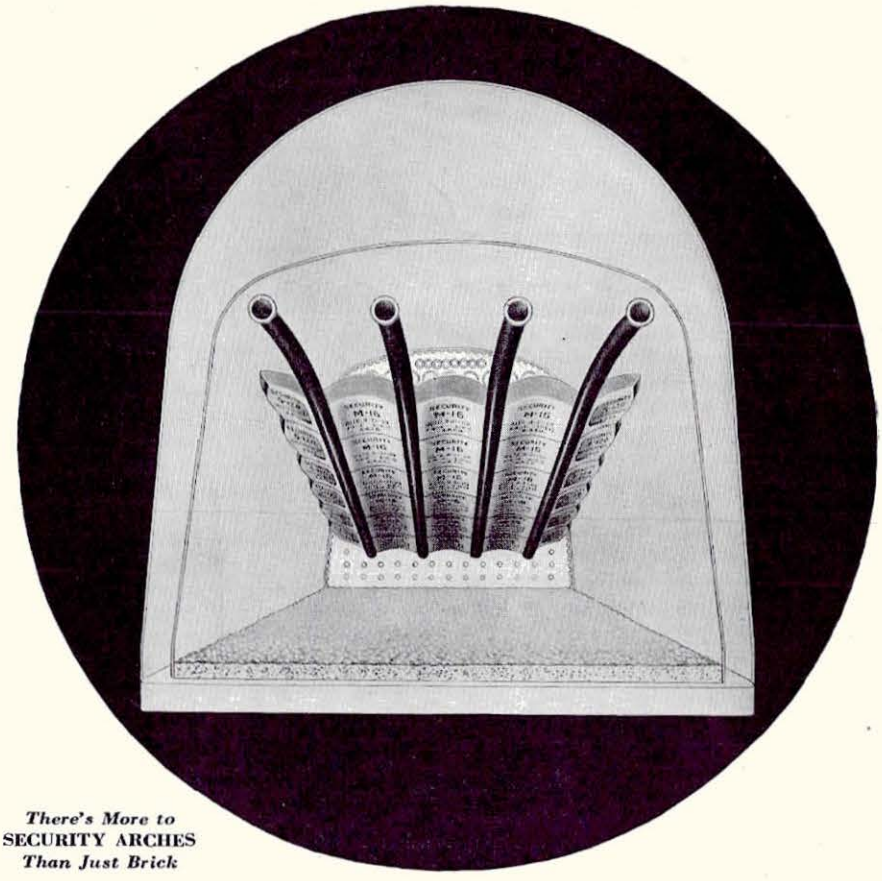
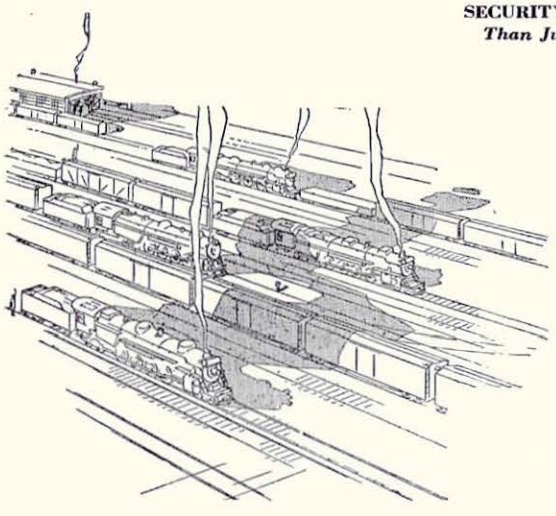
25 YEARS *of* BRICK ARCH DEVELOPMENT



There's More to
SECURITY ARCHES
Than Just Brick



For 25 years the combustion engineers of the American Arch Company have devoted their efforts to the single purpose of improving and standardizing the brick arch.

With higher speeds, heavier trains, changed firing conditions, larger boilers, and longer continuous locomotive service, Security Sectional Arch Brick has been continually improved to meet the constantly changing conditions.

The Standardized Security Sectional Arch Brick, represents the best that 25 years has taught in ceramics and brick arch design.

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

NRA MEMBER U.S. WE DO OUR PART

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

NEWS

57 Electric Locomotives Ordered by Pennsylvania

Approximately $15,000,000 involved in purchase of new power of streamline design

The Pennsylvania has placed orders for 57 streamline electric locomotives to be the most powerful electric passenger locomotives ever built. This is one of the largest locomotive equipment orders in the history of American railroading. Inquiry for this equipment was reported in the *Railway Age* of September 15.

Costing almost $15,000,000, the Pennsylvania's new electrics have been specially designed for this road's high speed passenger service to be inaugurated between New York, Philadelphia, Pa., Baltimore, Md., and Washington, D. C., early in 1935. They will be capable of making a regular operating speed of 90 miles an hour, and will haul trains of standard size and length. Twelve 57-inch driving wheels, six on each side, will drive the fully streamlined articulated locomotives with the full power of 4620 horse power at high speed.

Grace and symmetry will mark the lines of the new electric locomotive. Each end of the locomotive will slope gently inward from the floor to the cab roof, with rounded shoulders running toward the central operating compartment. The engineman's control position will be located at the center of the cab, giving an unobstructed view of the track and making possible a body design extremely pleasing to the eye.

More than 4,200,000 man-hours of work in railroad shops and in the shops of the electrical and equipment companies, are represented in these locomotive orders. It is expected that the work will be under way immediately, and that the locomotives will be delivered, ready for service, early next year. The purchase is being financed through the Public Works Administration and is a part of the Pennsylvania's seventy-seven million dollar improvement and equipment program, involving the new York-Washington roadway electrification and car and locomotive construction financed through the Government.

Eighteen complete locomotives will be built at the Pennsylvania's Altoona, Pa., Works, and the works also will apply the electrical propulsion and control apparatus to the chassis of 25 additional locomotives. The 25 chassis to be equipped at Altoona, will be built at the Baldwin Locomotive Works at Eddystone, Pa. The General Electric Company at Erie, Pa., will build 14 complete locomotives and the electrical propulsion and control apparatus for 9 others. The Westinghouse Electric & Manufacturing Company at Pittsburgh will build the electrical propulsion and control apparatus for 34 locomotives.

Each locomotive will cost in the neighborhood of $250,000 and will be 79½ ft. long, of all-steel construction and will weigh 460,000 lb. It will operate on an 11,000-volt, 25 cycle, single phase system, the current to be fed by overhead wires through a pantagraph. Its maximum starting tractive effort will be 72,800 lb.

Two main frames, each resting on six driving wheels and a four-wheel engine truck, joined by an articulated or hinged joint, will support the body of the locomotive. Power will be furnished by six pairs of twin traction motors, each pair attached to a driving axle. Power will be transmitted to the driving wheels through quill mounted gears, permitting the free spring play of axles and wheels.

The new locomotives will form part of the Pennsylvania's fleet of more than 150 electric locomotives designed specially for the New York-Washington passenger and freight service. This is the second extensive locomotive order placed by the Pennsylvania in recent months. In July, the company placed orders to proceed with the construction of 28 electric passenger locomotives at a cost of over $6,000,000. Work on these locomotives is progressing rapidly, and they will be placed in service in the near future.

Seminole Limited 25 Years Old

The twenty-fifth anniversary of the establishment of the Seminole Limited, the Illinois Central's Chicago-Florida train, occurred on November 15. On that day the train completed its 9,130th consecutive run over the 1,134-mi. route between Chicago and Jacksonville. None of its passengers has ever been fatally injured in a train accident.

Mediation Board Certifies as to Employee Representation

The National Mediation Board has issued a certification that the Railway Employees' Department, American Federation of Labor, has been authorized to represent the shop craft employees of the Northwestern Pacific. It has also certified that the Brotherhood of Locomotive Firemen and Enginemen has been authorized to represent the outside hostlers, outside hostler helpers, and inside hostlers on the Florida East Coast, and that the Railway Employees' Department, A. F. of L., has been authorized to represent the shop crafts on the Texas & Pacific, and the Texas Pacific-Missouri Pacific Terminal of New Orleans.

Zephyr on Initial Run Carried More Than 100

Demand for space so great that reservations were closed several days before event

The Zephyr of the Chicago, Burlington & Quincy carried more than 100 persons on its first scheduled run between Lincoln, Neb., and Kansas City, Mo., on November 11. The demand for space in the 72-seat capacity train was so great that reservations were closed several days in advance when requests amounted to several hundred. In order to provide for holders of through tickets, the sale of tickets from Lincoln and Omaha was limited to 50.

The demand for space on the initial run is significant in view of the fact that the Burlington, in order to satisfy the curiosity of people along the line and thus reduce the number of persons desiring to ride the train on November 11, operated 42 round-trip excursions of about one hour's duration each out of Lincoln, Omaha, Council Bluff, St. Joseph, Weston, Atchison, Leavenworth and Kansas City during the week from November 3 to November 10. On these 42 trips 1,169 persons were handled on the train.

The patronage of the train continued heavy on November 12, the second day of schedule operation. On the southbound trip, 36 passengers embarked at Lincoln and 43 at Council Bluff, the maximum number on the train at any time was 50, and 47 persons were carried into Kansas City. Northbound, 56 persons entrained at Kansas City and 41 entered Council Bluff, the maximum handled on the train at any one time being 6.3

The initial run on November 11, as reported in the *Railway Age* of November 10, was accompanied by ceremonies at Lincoln, Omaha, St. Joseph and Kansas City. Several thousand persons attended the ceremonies and were on hand to witness the arrival of the train.

New York Railroad Club

The New York Railroad Club's November meeting, designated "Our Electrical Night" and sponsored by Past President William G. Grove, was held at the auditorium of the Engineering Societies building, 29 West Thirty-ninth street, New York, on November 16. The program for the meeting was prepared under the auspices of the General Electric Company and was featured by a paper on "Progress in Electrical Transportation" presented by C. M. Davis, engineer, transportation department, General Electric Company.

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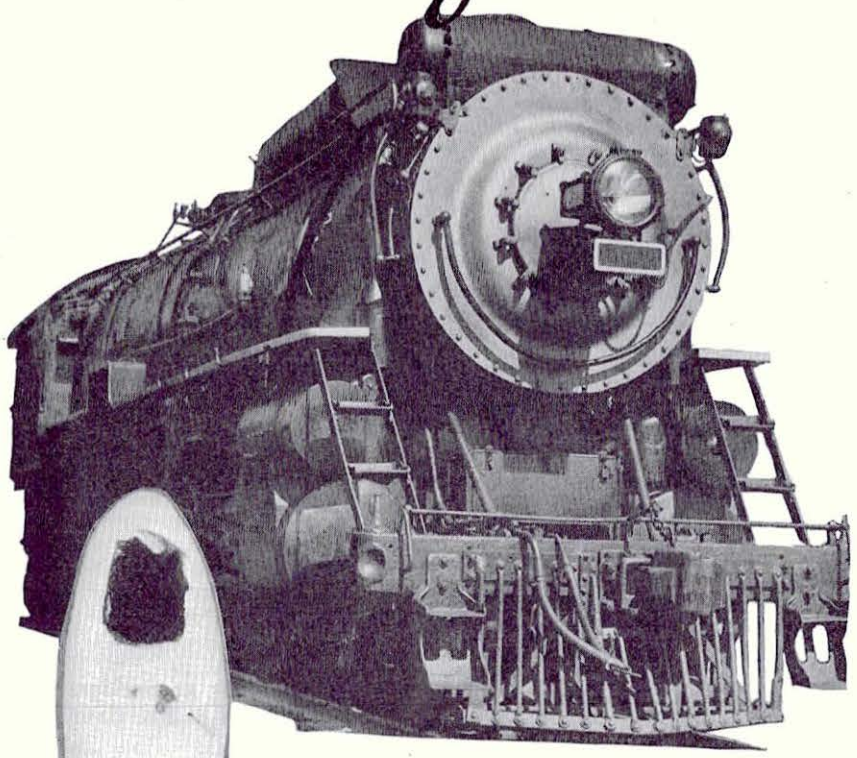
Strangled SUPERHEATER UNITS

Substantially Reduce Effective Boiler Pressure



SUPERHEATER units, in being repaired, frequently are restricted in area through the tubing or, as is pictured, through the return bends. The result is increased pressure drop from boiler to cylinders and lower m. e. p. for a given boiler pressure.

Such superheater units are strangled!

Superheater units repaired by welding and other uncertain make-shift methods have been known to have the steam passages restricted as much as 25 to 35 per cent. Restrictions in gas and steam areas of a set of superheater units, through repair methods, will reduce the efficiency of the locomotive 3 to 5 per cent.

Think what this means when the units of a number of locomotives are so repaired.

Such reductions of effectiveness can be avoided definitely only by having superheater units maintained always at their original dimensions and areas. The one way to assure this is to have them REmanufactured—not merely repaired—when they become unserviceable after many years of duty.

REmanufactured superheater units not only have the specified dimensions, but have a renewed serviceability for many more years—all provided at a cost much less than for new units.

Send your next lot of unserviceable superheater units to our plant for REmanufacture.

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, Inc.

60 East 42nd Street
NEW YORK

ELFESCO

Peoples Gas Building
CHICAGO

A-925

Canada: The Superheater Company, Limited, Montreal

Superheaters - Feed Water Heaters - Exhaust Steam Injectors - Superheated Steam Pyrometers - American Throttles

C. & N. W. and U. P. to Resume Escorted California Tours

The Chicago & North Western and the Union Pacific will operate escorted tours to California this winter for the first time since 1930. A 16-day Christmas and New Year's holiday tour and 21-day tours in January and February are being offered.

Southern Pacific Revises Timetables

The Southern Pacific's "Summer Cascade," which was placed in service between Portland, Ore., and San Francisco in May, has been replaced by trains Nos. 17 and 18. The southbound schedule has been reduced 50 min. The northbound schedule remains unchanged. The "West Coast," which was consolidated with No. 17 during the summer months, is now being operated as a separate train, leaving Portland at 10:05 p.m. and arriving in Los Angeles at 8:45 the second morning as at present.

Railway Employment Reduced in October

A further reduction of 1.18 per cent in the number of employees in the service of Class I railways took place between the middle of September and the middle of October, according to the Interstate Commerce Commission's monthly compilation. The number in October was 1,011,228, which was also 1.33 per cent less than the number reported as of October last year.

Supreme Court to Be Asked to Review Pension Law Decision

The Department of Justice has announced that the government's appeal from the decision of Chief Justice Wheat of the supreme court of the District of Columbia, holding the railroad retirement act unconstitutional, to the court of appeals of the District of Columbia, has been perfected. A petition for a writ of certiorari for review of the decision by the Supreme Court of the United States may now be filed.

Court Refuses to Block Removal of Offices

An application for a permanent injunction to restrain the trustees of the Cincinnati Southern and the Cincinnati, New Orleans & Texas Pacific from removing the general auditing offices and the claim office of the latter road from Cincinnati, Ohio, to Atlanta, Ga., was denied in the common pleas court in Cincinnati on November 8. The court's refusal resulted in a lifting of a temporary injunction granted some time ago in a suit brought by Robert S. Alcorn, an attorney, as a taxpayer.

R. B. A. Dinner December 6

Harry A. Wheeler, president of the Railway Business Association, announces that the association will hold its annual dinner at the Commodore hotel, New York, on December 6. The announcement reads in part as follows:

"We will give this dinner to the Association of American Railroads in recognition of the most important and constructive step taken by the railroads since they were returned to private operation in 1920.

"Because of the important transportation legislation now being formulated for the consideration of the seventy-fourth Congress and because the new association cannot yet speak publicly of its program, our dinner will not be the usual forum with an hour or more of speeches, but will be a real good-fellowship occasion, devoted to an unusualy good dinner with periods during the service for intermingling.

"Speeches will be limited to a brief but cordial greeting to our guests and a response by their president, in which he may choose to emphasize the bond that has always existed between these two groups.

"This may be regarded as something of an innovation, but we believe that our guests will welcome the change and we trust you will also approve."

Export of Locomotives and Cars for Chile

The largest export shipment of railroad equipment since the beginning of the depression was made by the Baldwin Locomotive Works and the Bethlehem Steel Export Corporation at the Baldwin docks near Chester, Pa., on November 16. The shipment consisted of 10 locomotives, 10 tenders and 15 first-class passenger cars for delivery to the Chilean State Railways.

Don Manuel Trucco, Ambassador of Chile, received the equipment on behalf of his government. Robert S. Binkerd, vice-president and director of sales of the Baldwin Locomotive Works, and S. M. Bash, vice-president of the Bethlehem Steel Export Corporation, conveyed greetings for American industry. The affair was followed by a dinner to the ambassador and to the consular officials representing Latin American countries at Philadelphia.

Zephyr Hit by Truck

A farmer's truck ran into the side of the Burlington's light weight high speed "Zephyr" on November 13, as the train, westbound, was passing through Greenwood, Neb., 17 miles east of Lincoln, at about 34 miles an hour. No one was injured and the damage to the train, consisting of a broken step on the first car and a dent in the body, amounted to only $50. The train was only 15 min. late at Lincoln. The truck ran into the mail section of the first car and the impact swung the truck so that its rear end scratched and dented the body of that car.

A.A.R. Establishes Contact with Government Officials

The members of the executive committee of the new Association of American Railroads, who have established offices in Washington and who expect to devote a large part of their time to the work of the association, began their work in Washington last week by establishing contact through "courtesy calls" with President Roosevelt and various government officials who have close relations with railroad affairs and who will have an important influence on the program of transportation legislation expected at the coming session of Congress. On November 7 they called on Co-ordinator Eastman and expressed their desire to co-operate with him; on the following day they called on Chairman Lee and other members of the Interstate Commerce Commission, and on Friday they saw President Roosevelt at the White House. They were with the President but a few minutes. Later they called on Secretary Roper of the Department of Commerce, who is chairman of a special committee to advise the President on transportation legislation; on Chairman Jesse H. Jones of the Reconstruction Finance Corporation, and W. A. Harriman, head of the administrative division of the National Recovery Administration. A meeting of the board of directors of the association was called for Friday of this week.

New Jersey Requires Crossing Gates

The Public Utilities Commissioners of New Jersey, following the investigation of an accident at a crossing at Dumont, on the West Shore (New York Central), last June, has ruled that the flashing-light signals which have been in use at that crossing since 1927, now furnish inadequate protection, and an order has been issued calling for the installation of gates, to be operated for all train movements over the crossing; and flagmen must be placed at the crossing until the gates are installed. There are three main and two other tracks at this crossing, and traffic on the highway has increased recently.

Brotherhood Asks Reconsideration of Trackage Rights Case

The Brotherhood of Railway and Steamship Clerks has petitioned the Interstate Commerce Commission for a reargument before the entire commission of the case in which Division 4 authorized the Chicago Great Western to extend its operations over the tracks of the Kansas City Southern in and near Kansas City, Mo. The petition takes the position that as the operation had been in effect for two months before the application was filed it was asking a ratification of an illegal act and that Division 4 erred in not requiring protection of the interest of the employees.

Revised Tickets and Rate Reductions

The Pennsylvania-Reading Seashore Lines will, on December 15, introduce a number of new forms of tickets and, at the same time, make some material rate reductions; and weekly and monthly tickets will no longer have to bear the photograph of the holder.

There will be a new 10-trip ticket good for 30 days; a 50-trip ticket to be used within 30 days, taking the place of the present 60-trip ticket; and the 12-trip weekly tickets will be reduced in price.

The cost of 150-trip tickets will be reduced 10 per cent, and two-day excursion tickets will be sold at Atlantic City for Philadelphia, good on all trains, both ways.

The 10-trip ticket will cost $7.75 from Atlantic City to Camden ferry, and $9 to Philadelphia over the bridge. These tickets can be bought at any time, not being limited to a calendar month.

The 50-trip ticket will cost $25, and will cost $1.40 less than the present 60-day ticket.

Twelve-trip weekly tickets will be re-

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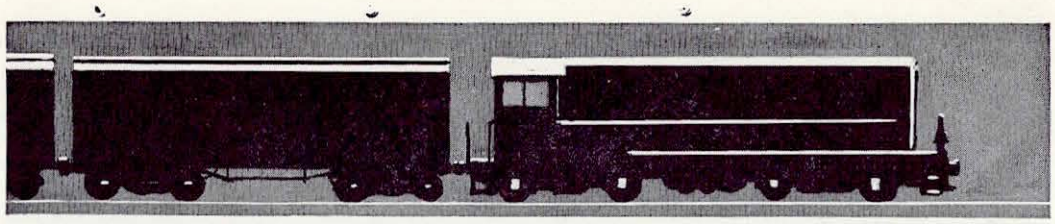
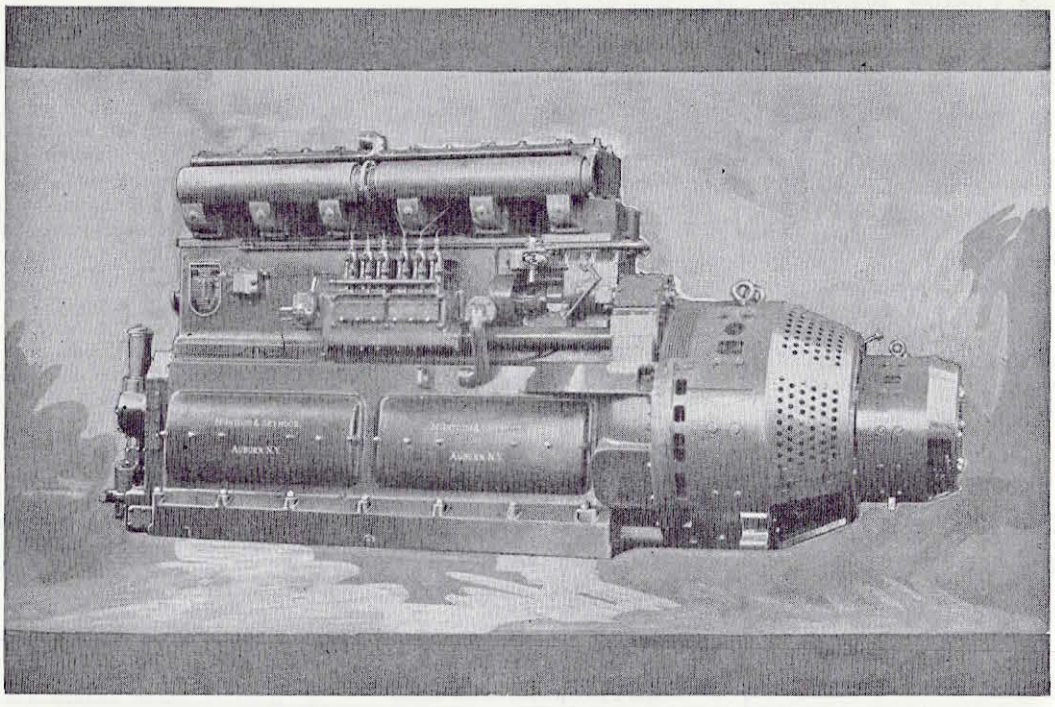
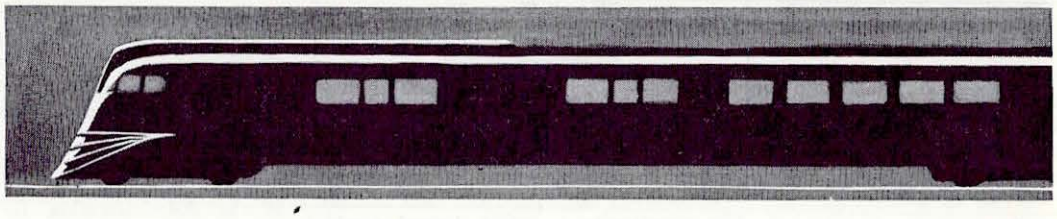






RAILROAD DIESELS FOR RAILROAD MEN

Reliability in service with low cost and ease of maintenance are the factors of prime importance to a buyer of Diesel locomotives.

These factors predominated all others at all times in the minds of the designers of the Alco unit.

AMERICAN LOCOMOTIVE COMPANY

ALCO DIESEL

30 CHURCH STREET · NEW YORK · N.Y.

duced 10 per cent and there will be a similar ticket over the bridge route at $7.75.

One-day excursion fares from Philadelphia to Atlantic City will cost $1.25 for the round trip from the ferry, and $1.50 over the bridge.

Signals Replace Crossing Watchmen

The Delaware & Hudson has been authorized by the New York State Public Service Commission to install, at six streets in Glens Falls, approved flashing-light automatic signals, where at present there are various arrangements of warning bells and flagmen. Several accidents have occurred at these grade crossings and some of them have been fatal. About 10 trains a day cross these streets. The highway traffic is light at four of the crossings and moderately heavy at two of them.

The crossings are now attended by flagmen during certain hours, and most of them have warning bells. In some cases, one flagman attends to a couple of crossings. None is attended later than 9 p. m.

Movement of 2375 Tons of Gold

With the arrival in Denver, Col., on November 12 of a train of five carloads of gold coins and bars the Post Office Department completed its shipment of more than 2,375 tons of gold from the San Francisco mint to the mint at Denver.

The total value of the gold transported approximated $2,300,000,000 and with the exception of a toe injury to an assistant chief clerk the whole movement was completed without incident.

Altogether there were 97 carloads of gold in the shipment, equal to a solid train of more than one mile in length.

In addition to the postal inspectors and railway mail service men who guarded the cars each train carried 32 soldiers of the regular army.

Pennsylvania Storedoor Service Made Permanent

The Pennsylvania's plan for the collection and delivery of l.c.l. freight, inaugurated experimentally last December for a period of one year, will be made a permanent feature of the service, according to an announcement issued on November 14. The original tariff provided for automatic expiration at the close of the present month. The expiration is now cancelled by a supplementary tariff.

"This step," the P. R. R. Statement says, "has been taken by reason of the heavy and steadily increasing patronage which the service has attracted, and the undoubted evidence that it meets a widespread demand for complete door-to-door transportation. At the present time over 60,000 shippers of merchandise and other less-than-carload freight are using the service regularly. In a test period of five months more than 1,000,000 shipments were handled.

"Since the plan was placed in effect it has been the subject of constant study to increase its attractiveness and convenience. In consequence, many changes and refinements have been adopted, and others will be made as further experience with requirements of the shipping public indicates."

The service is operative throughout the territory of the Pennsylvania, being available at about 2,000 points. It is handled in all cases by contract with local truckers. The service is also provided to and from points on a number of connecting lines which have joined in the arrangement.

Alton Simplifies Menu

In an effort to simplify its menu and thereby make it easy for patrons to select meals, the Alton has adopted the form shown in the accompanying illustration. Each column on the menu contains the dishes of a course and all the diner has to do is select one dish from each column. The opportunity to select desired combinations of food eliminates the disappointment experienced by the patrons when fixed combinations are shown on the bill of fare.

The Alton Railroad Company
DINING CAR DEPARTMENT

Fixed Price 60¢ Breakfast

Choose Your Own Assortment

One choice of any one article in each column

STEWED PRUNES WITH CREAM	OATMEAL WITH CREAM	OMELET AS DESIRED	DRY OR BUTTERED TOAST
ORANGE JUICE OR SLICED	CORN FLAKES WITH CREAM	HORSESHOE CUT HAM (1) EGG	BRAN MUFFINS
GRAPE FRUIT (HALF)	PUFFED RICE WITH CREAM	CORNED BEEF HASH WITH (1) EGG	BREAKFAST ROLLS
CANTALOUPE (PORTION)	ALL BRAN WITH CREAM	BACON (3) SLICES ONE EGG	TOASTED WHOLE WHEAT BREAD
HONEY DEW MELON (PORTION)	SHREDDED WHEAT BISCUIT WITH CREAM	ROAST BEEF HASH SOUTHERN STYLE	FRIED CORN MEAL MUSH MAPLE SYRUP
TOMATO JUICE	GRAPE NUTS WITH CREAM	ONE LOIN LAMB CHOP	CORN MUFFINS

Choice of Beverage served with each Breakfast
COFFEE TEA MILK

Please write your selections on meal check for employees guidance

F. A. STINE
Mgr. Dining Car & Comm. Dept.
Baltimore, Md.

Wood Lining for Freight Car Roofs

The Southern Pine Association is sending out a summary of the progress report of the A. R. A. Committee on Car Construction* concerning tests of the insulation values of various types of roof-lining of metal-roofed freight cars.

"While the Committee on Car Construction assumes the attitude that these tests are not yet to be recognized as conclusive, nevertheless the Southern Pine Association accepts the progress report as corroborating evidence that wood is the best possible insulator against moisture condensation," declared H. C. Berckes, secretary-manager of the Association. "Our Association regards the results of these tests as additional proof of the value of Southern yellow pine as a lining.

"The association is informing manufacturers of Southern yellow pine, as well as wholesalers and commission men, of the results of these tests and is instructing Southern pine manufacturers that, even though these tests be non-conclusive, they have a legitimate reason to call upon the claim departments of the railroads for compensation for damage to shipments of lumber wherein defects are developed by reason of unlined metal roofs, these defects being such as crooking, warping, twisting, checking and shrinkage in width and thickness. It has been the practice for manufacturers to call for reinspection of lumber which is questioned as to its grade upon arrival at destination, forgetting that defects which have developed may be entirely the result of having moved in cars with unlined metal roofs. It is suggested to Southern pine manufacturers that they should not use, except under protest, metal-roofed cars which are not lined with wood, as railroads easily can supply wood-lined cars with lumber shipments."

The Southern Pine Association, it is stated, takes the view that manufacturers of other products, such as lime, cement, flour and other foods, that suffer damage through shipment in cars with unlined metal roofs, should be informed of the progress reports of the A. R. A. Committee on Car Construction. Such shippers can avoid damage to their products, and railroads can save payment of damage claims if only those cars be employed which are insulated by the use of wood as a lining for the roof.

* Railway Age, August 4, 1934, page 141.

Railroads Again Call on R.F.C.

With the falling off of traffic and the increases in expenses that have taken place in recent months a number of railroads are finding themselves forced to turn their attention again to the Reconstruction Finance Corporation. The R.F.C. had been comparatively inactive so far as railroad loans are concerned in the first part of the year although the railroads were making a large number of loans during that time from the Public Works Administration for maintenance and equipment. In 1932 the R.F.C. had loaned railroads a net amount of about $280,000,000; in 1933 the net addition to its railroad loans outstanding was $57,000,000, and up to September 30 the net total had increased only about $6,000,000 more this year, to $343,000,000. Recently, however, the Interstate Commerce Commission has made the necessary findings authorizing additional loans of $6,000,000 to the New York, New Haven & Hartford, $7,357,000 and $4,138,000 to the Chicago & Northwestern, and $3,000,000 to the Lehigh Valley, and it now has pending applications for loans of $9,000,000 to the Chicago, Milwaukee, St. Paul & Pacific, $3,182,150 to the Denver & Rio Grande Western, and $4,000,000 to the Illinois Central. It has also approved some applications for extension of loans.

Under a provision of the emergency transportation act it is now necessary for the commission before approving a loan to issue a finding that the railroad is not in need of financial reorganization and it has made such findings recently in the cases of the New Haven and the Northwestern, after having earlier in the year made such findings as to the New York Central, the Baltimore & Ohio, and the Boston & Maine.

Up to October 31, according to its latest

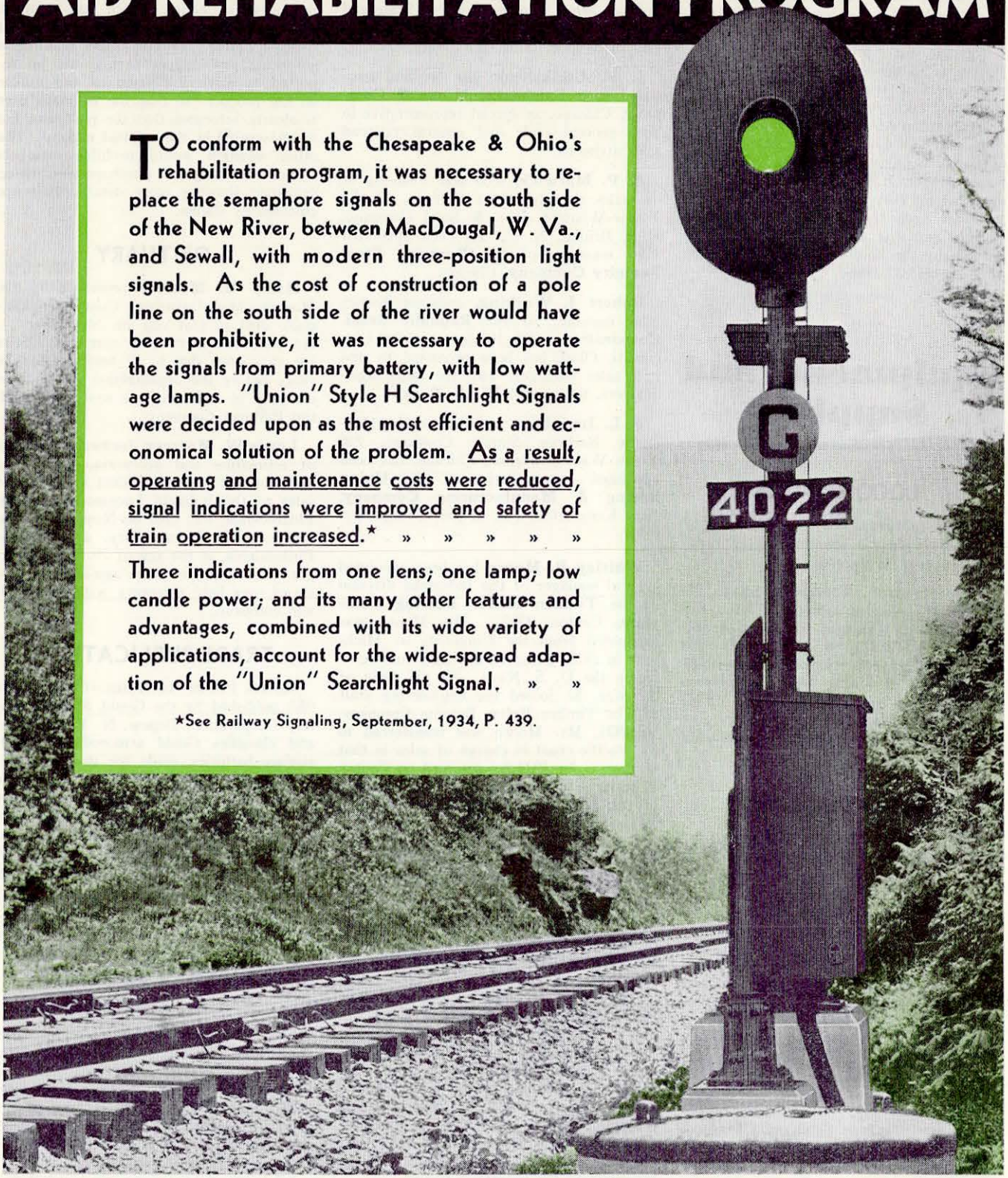
Continued on next left-hand page

"UNION" SEARCHLIGHT SIGNALS AID REHABILITATION PROGRAM

TO conform with the Chesapeake & Ohio's rehabilitation program, it was necessary to replace the semaphore signals on the south side of the New River, between MacDougal, W. Va., and Sewall, with modern three-position light signals. As the cost of construction of a pole line on the south side of the river would have been prohibitive, it was necessary to operate the signals from primary battery, with low wattage lamps. "Union" Style H Searchlight Signals were decided upon as the most efficient and economical solution of the problem. As a result, operating and maintenance costs were reduced, signal indications were improved and safety of train operation increased.* » » » » »

Three indications from one lens; one lamp; low candle power; and its many other features and advantages, combined with its wide variety of applications, account for the wide-spread adaption of the "Union" Searchlight Signal. » »

*See Railway Signaling, September, 1934, P. 439.



Union Switch & Signal Co.
SWISSVALE, PA.

1881 S 1934

report, the R.F.C. had authorized loans to railroads amounting to $442,994,930, of which $423,801,021 had been disbursed and $70,631,455 had been repaid.

Although there has been a good deal of talk in Washington about requiring railroads that do not earn their charges to reorganize, little progress has been made so far as to the roads that have been in the hands of trustees or receivers and there has been some disposition to avoid reorganization of roads that could be tided over, although Commissioner Mahaffie has dissented in one or two cases. Chairman Jones of the R.F.C. has told newspaper men that the corporation is making a close study of roads that are not earning their charges and that seven roads are now in default to the corporation to the extent of about $55,000,000.

Equipment and Supplies

LOCOMOTIVES

THE PENNSYLVANIA has ordered 57 streamlined electric locomotives. For details see item on page 625.

THE ATCHISON, TOPEKA & SANTA FE has placed an order with the Winton Engine Company (General Motors Corporation), for a 3,600-hp. (4 power units of 900 hp. each) Diesel electric locomotive, which will be used in pulling the Chief between Chicago and Los Angeles, Calif. This company was reported in the *Railway Age* of October 20 as considering the placing of this order.

PASSENGER CARS

THE NORTHERN PACIFIC is inquiring for 24 light-weight de luxe coaches.

IRON AND STEEL

THE NORFOLK & WESTERN has ordered 10,000 tons of 131-lb. steel rail—7,500 tons from the Carnegie Steel Company and 2,500 tons from the Bethlehem Steel Company.

MISCELLANEOUS

BOSTON & MAINE.—The National Malleable & Steel Castings Company, Cleveland, Ohio, has received orders for National Isothermos journal boxes under the tenders for the five new Pacific passenger locomotives now being built by the Lima Locomotive Works; and five tenders of the new Mountain type locomotives for freight and passenger service, now being built by the Baldwin Locomotive Works; also for 10 deluxe coaches now being built by the Pullman-Bradley Car Corporation for the Boston & Maine.

Supply Trade

Louis M. Shine has been appointed railway sales manager of the **Standard Varnish Works,** with offices at 386 Fourth avenue, New York City.

J. F. Cruikshank has become associated with **Fairbanks, Morse & Company,** Chicago, as special representative in both general scale and general railroad sales divisions.

A. P. Marwick, who was formerly in the sales department at Chicago, of the Taylor-Wharton Iron & Steel Company, High Bridge, N. J., has been appointed sales manager of the **Burnside Steel Foundry Company,** Chicago.

Robert J. Working, assistant district sales manager of the **Republic Steel Corporation,** with headquarters at Cincinnati, Ohio, has been promoted to district sales manager, with the same headquarters, to succeed **W. A. Peck.**

F. L. Ingraham, president of the Marquette Railway Supply Company, 720 North Wabash avenue, Chicago, has been appointed representative of the **Union Spring & Manufacturing Company,** New Kensington, Pa., in the Chicago district.

Whitley B. Moore has been appointed general manager of the Industrial division of the **Timken Roller Bearing Company,** Canton, Ohio. Mr. Moore was graduated from the University of Michigan in 1918, going immediately into service in the U. S. Navy. At the close of the war, he joined the engineering staff of The Timken Roller Bearing Company. In 1921, Mr. Moore was transferred to the Pacific coast in charge of sales in that territory. In 1924 he returned to Canton to serve as assistant general sales manager of the Industrial division and since 1930 was sales manager.

Exemptions from Gray Iron Foundry Code Provisions Denied

The National Industrial Recovery Board has denied applications of the Baldwin Locomotive Works and the code authority for the machinery and allied products industry for exemption from the provision of the gray iron foundry industry's code forbidding selling below cost. Both applicants for exemption objected to defining costs by the gray iron foundry industry's uniform cost and estimating system. The board was informed by the deputy administrator in charge of the code that this requirement does not work a hardship, since the code provision permits use of any recognized system which conforms to the essentials of the industry's system.

Locomotive Appliance Industry Trade Practices

Objections or suggestions concerning the addition of two fair trade practice provisions to the code for the locomotive appliance industry subdivision of the machinery and allied products industry must be submitted to Deputy Administrator W. W. Rose, Washington, D. C., before November 30, the NRA has announced. One provision would provide that, during the time a manufacturer or his successor is producing an article which has required special designing, research or development expense, other manufacturers making a substitute replacement part would be required to mark the name of the maker on the product "so that the ultimate user is clearly informed that the part was not manufactured by the original maker." The other addition would prohibit members from furnishing to purchasers working drawings showing more details than are customarily shown.

OBITUARY

Harry U. Morton, president of the Morton Manufacturing Company, Chicago, died in that city on November 11. He had been inactive in company affairs for two years due to ill health. For 18 years before the organization of his own company in 1913, he was associated with the Pullman Company.

Lewis W. Metzger, formerly in charge of estimating and accounting work and assistant to the vice-president in charge of sales of the Baldwin Locomotive Works, Philadelphia, Pa., died on November 13 at his home in Mount Airy, a suburb of Philadelphia, at the age of 79. Mr. Metzger had retired five years ago after a service of over half a century with the Baldwin company.

TRADE PUBLICATION

MOTIVE POWER BATTERIES.—Bulletin No. 952, published by the Gould Storage Battery Corporation, Depew, N. Y., describes and classifies Gould armored Kathanode storage batteries, made for use on Diesel and gas-electric locomotives, articulated trains and motor cars. Tables are given for the various types of cells, which show capacity, charging rates, overall dimensions and weights. A feature of the bulletin is a graphical method for determining required battery capacity.

Construction

CENTRAL OF NEW JERSEY.—This company has authorized an expenditure of about $21,700 for the construction at Laurence Harbor, N. J., of a three-span, skew highway bridge, 118 ft. long with a 20-ft. roadway and concrete abutments and steel girders and floorbeams.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract has been awarded to Lubinski, Inc., Milwaukee, Wis., for the construction of a sandblast building at this company's locomotive and car shops at Milwaukee.

DELAWARE & HUDSON.—A contract for the elimination of the Esperance station crossing of this road in Duanesburg, N. Y.,

has been awarded to the Wilson & English Construction Company, New York, whose bid was $46,556. Approval of this contract by the New York Public Service Commission was reported in the *Railway Age* of November 10, page 591.

DELAWARE, LACKAWANNA & WESTERN.—Specifications and an estimate of cost of $112,700, exclusive of land and property damages, for the elimination of the grade crossing of this road on the Batavia-Pavilion county highway in the Town of Bethany, N. Y., have been approved by the New York Public Service Commission.

ERIE.—The New York Public Service Commission has approved plans, specifications and an estimate of cost of $202,400 for the elimination of the Fairmount avenue crossing of this road in Jamestown, N. Y. The railroad was authorized to do certain work without contract in connection with the elimination not to exceed $22,600.

NEW YORK CENTRAL.—The New York Public Service Commission has denied an application of this road for the suspension of its order directing the elimination of the Schuyler street crossing in Utica, N. Y. See *Railway Age* September 15, 1934, page 329.

Financial

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Abandonment.*—Examiner C. P. Howard of the Interstate Commerce Commission has recommended in a proposed report that the commission authorize the abandonment of the line from Elmwood, Wis., to Weston, 4.2 miles.

EL PASO & SOUTHWESTERN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire the railroad property of the Arizona & New Mexico, a wholly-owned subsidiary. It is proposed to dissolve the company.

GULF, MOBILE & NORTHERN.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume liability as guarantor for $350,000 of equipment trust certificates of 1934 which will be sold to the government at par.

MINNEAPOLIS & ST. LOUIS.—*Auction Sale.*—The auction sale of the Minneapolis & St. Louis scheduled for November 12 was postponed to February 11 because of lack of bidders.

Dividends Declared

Boston & Albany.—$2.25, payable December 31 to holders of record November 30.

Catawissa.—First and Second Preferred, $1.25, semi-annually, payable November 22 to holders of record November 10.

Cincinnati, New Orleans & Texas Pacific.—Preferred, $1.25, quarterly, payable December 1 to holders of record November 15.

Philadelphia, Baltimore & Washington.—$1.50, semi-annually, payable December 20 to holders of record December 15.

Pittsburgh, Bessemer & Lake Erie.—Preferred, $1.50, semi-annually, payable December 1 to holders of record November 15.

Providence & Worcester, $2.50, quarterly, payable January 2 to holders of record December 12.

Stony Brook.—$3.00, semi-annually, payable January 5 to holders of record December 31.

Sussex R. R.—50c, semi-annually, payable January 2 to holders of record December 15.

Union Pacific.—Common, $1.50, quarterly, payable January 2 to holders of record December 1.

West Jersey & Seashore.—$1.50, semi-annually, payable January 2 to holders of record December 15.

Western New York & Pennsylvania.—$1.50, semi-annually; 5 Per Cent Preferred, $1.25, semi-annually, both payable January 2 to holders of record December 31.

Average Prices of Stocks and of Bonds

	Nov. 13	Last week	Last year
Average price of 20 representative railway stocks..	35.81	35.49	37.10
Average price of 20 representative railway bonds..	73.92	73.74	63.30

Railway Officers

EXECUTIVE

Homer E. McGee, formerly executive vice-president of the Missouri-Kansas-Texas, who has been elected president of the Green Bay & Western with headquarters at Green Bay, Wis., as noted in the *Railway Age* of November 10, was born on October 15, 1885, at Alvord, Tex. He entered railway service on March 1, 1906, as a station helper with the Missouri-Kansas-Texas of Texas, then serving consecutively as a telegraph operator, agent, car distributor, train dispatcher, chief train dispatcher, trainmaster, superintendent, general superintendent, and general manager with headquarters at Dallas, Tex. In February, 1922, he was appointed general manager of the Missouri-Kansas-Texas Lines, at Parsons, Kan., being transferred to Denison, Tex., in April of the following year. In February, 1927, Mr. McGee was appointed vice-president and general manager of the Katy Lines with headquarters at Dallas, being elected executive vice-president with headquarters at St. Louis, Mo., and Dallas in 1930. Mr. McGee resigned from the latter position about a year ago.

Homer E. McGee

OPERATING

Arthur A. Cavanagh, superintendent of the Allandale division of the Canadian National, has been appointed general manager for the Temiskaming & Northern Ontario.

Stanley F. Mackay, Superintendent of the Providence division of the New York, New Haven & Hartford, has been appointed superintendent of transportation with headquarters at New Haven. **J. F. Doolan** has been appointed superintendent of the New Haven division, succeeding **R. M. Smith,** who has been assigned to special duties. **J. J. Snavely,** superintendent of the Hartford division, has been appointed superintendent of the Providence division, succeeding Mr. Mackay.

Hans O. Halsted, superintendent of car service of the Pere Marquette, who has been appointed superintendent of transportation, with headquarters at Detroit, Mich., as noted in the *Railway Age* of November 10, was born on February 5, 1863, at Milwaukee, Wis. He entered railway service in 1884 with the Union Pacific as a warehouse laborer and freight office clerk, being promoted through various positions with this company to that of assistant superintendent in 1889. In February, 1893, Mr. Halsted went with the Flint & Pere Marquette (now the Pere Marquette) as a dispatcher, later serving as agent at Port Huron, Mich. From 1893 to 1896, Mr. Halsted was connected with a logging and ore carrying line, returning in the latter year to the Flint & Pere Marquette in charge of the Toledo, Ohio, terminals. He then served successively as chief dispatcher and trainmaster at Grand Rapids, Mich., superintendent at Plymouth, Mich., general superintendent and superintendent of telegraph, superintendent of terminals at Chicago, superintendent of transportation, superintendent of the Detroit division, and on special work in the general manager's office. In 1914, he was appointed superintendent of transportation and three years later he was made general superintendent of transportation, continuing to hold this position dur-

Hans O. Halsted

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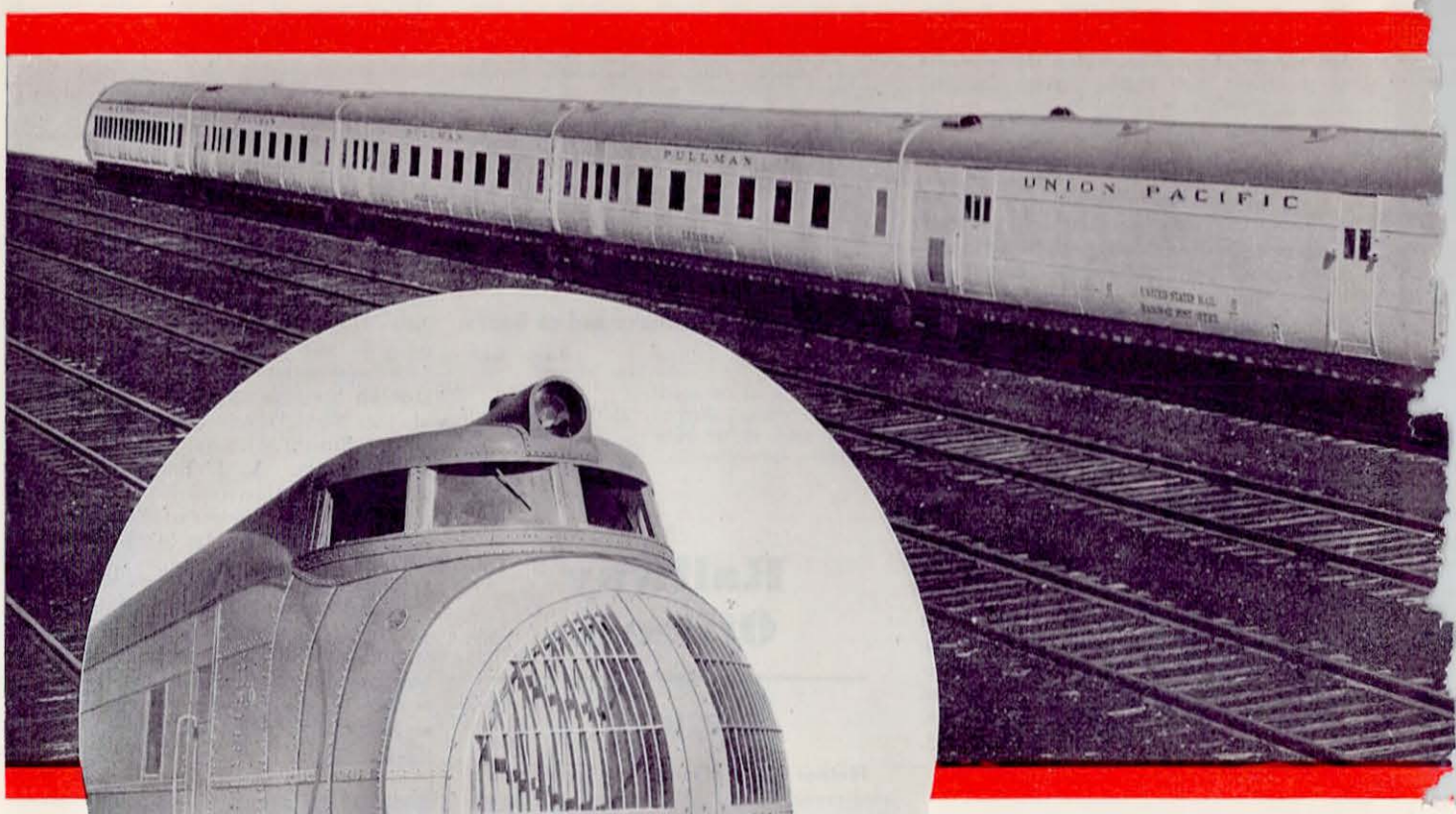
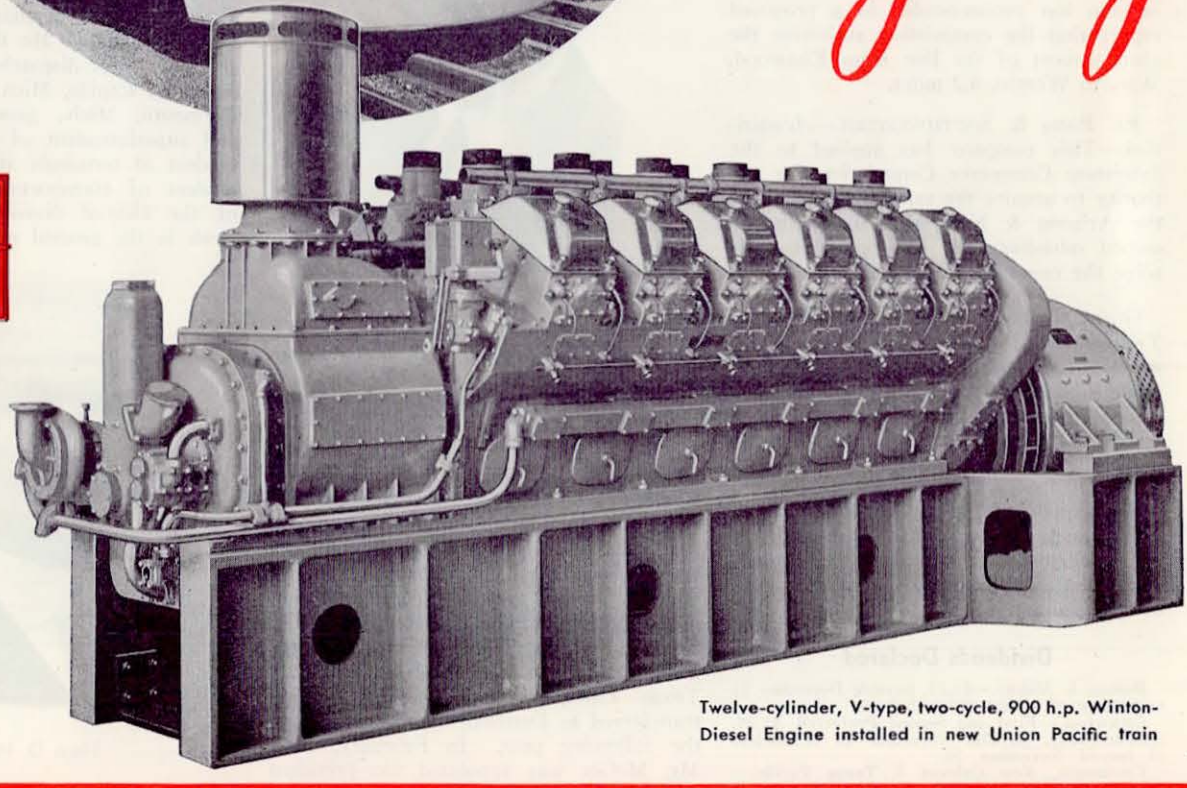
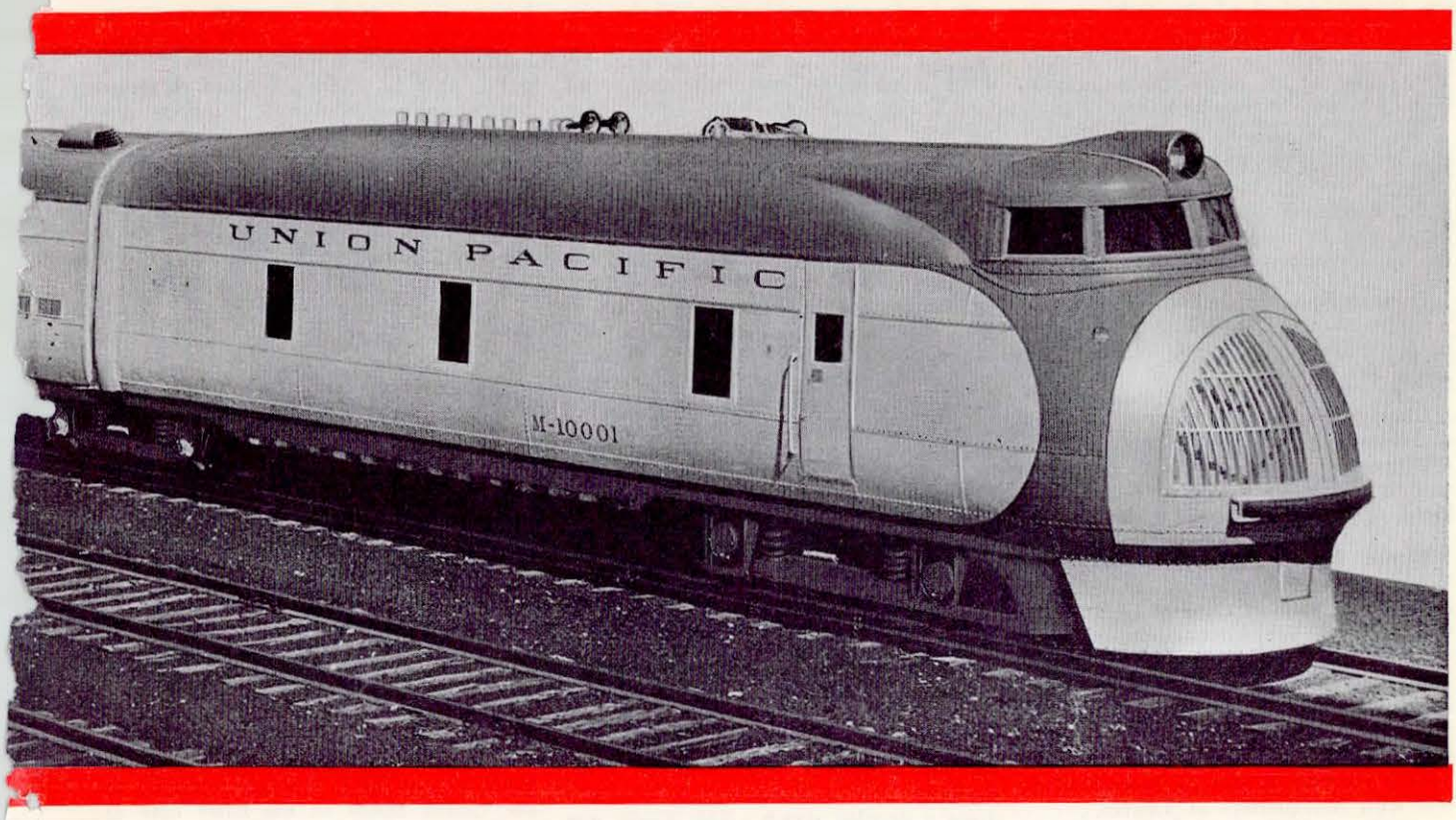


THE *Glory*



Twelve-cylinder, V-type, two-cycle, 900 h.p. Winton-Diesel Engine installed in new Union Pacific train

NEW UNION PACIFIC M-10001 . . . .



OF OLD "999" IS DIMMED

. . . Long Live Speed!

THE new Union Pacific high-speed train has set a breath-taking pace for coast to coast rail travel. From Los Angeles to New York, 3260 miles, in 56 hours and 55 minutes. Miles-per-hour speeds never before attained. Cheyenne to Omaha, 507 miles, average 84 miles per hour . . . . a two mile stretch between Dix and Potter, Wyoming, in one minute; 120 miles per hour. Thus the accomplishment of this new thoroughbred of the rails pays tribute to the performance and economy of modern Winton-Diesel power. The M-10001 is the first high-speed train powered by a twelve-cylinder V-type Winton-Diesel engine. Of particular significance is the fact that the same fuel was used for the main power plant which operated the train, and for the auxiliary power plant which supplied current for lighting, air-conditioning and heating. Total fuel cost, 2.44 cents per train mile. In presenting this record of speed and economy, Winton takes occasion to congratulate the Union Pacific on the outstanding performance of this new train.

WINTON ENGINE CORPORATION, Cleveland, Ohio, U. S. A.

SUBSIDIARY OF GENERAL MOTORS CORPORATION

LATEST TRANSPORTATION SENSATION

ing federal control of the railways. In 1920 he was appointed superintendent of car service, which position he was holding at the time of his recent appointment as superintendent of transportation.

OBITUARY

Dr. August F. Jonas, chief surgeon of the Union Pacific System for 29 years, died on November 13 at the age of 76.

Duncan A. Story, retired freight traffic manager of the Canadian National, died on November 2 at Moncton, N. B., at the age of 81.

Charles A. Allen, who retired in 1912 as assistant to the vice-president and general manager of the Erie, with headquarters at Youngstown, Ohio, died at his home, at Galion, Ohio, on October 19.

Elmer E. Whitted, who resigned in 1924 as general solicitor of the Colorado & Southern, died on October 18, at Denver, Col. Mr. Whitted was born on April 11, 1861, and was educated at DePauw University. He first entered railway service as assistant general attorney on the Union Pacific, Denver & Gulf (now the Colorado & Southern), advancing through various positions to that of general solicitor, with headquarters at Denver.

David Redman Burbank, former secretary of the Illinois Central, died on November 9 at his home in Ridgewood, N. J., at the age of 63. Mr. Burbank resigned last December because of ill health. He was born on September 15, 1871, at Henderson, Ky., and was educated at the University of Minnesota. Mr. Burbank's entire service was with the Illinois Central where he began work in May, 1894, as clerk. In November, 1906, he became assistant secretary and in 1911, secretary.

Lewis J. Spence, retired executive officer of the Southern Pacific, died of heart disease on November 12, at his home in Brooklyn, N. Y. He was 66 years old. Mr. Spence entered railway service as a stenographer with the Southern Pacific, serving in that capacity and as secretary and chief clerk to the assistant general traffic manager until January, 1896, when he was advanced to eastern freight agent. In March, 1902, he was appointed general eastern freight agent at New York, also becoming general agent of the Atlantic Steamship Lines of the Southern Pacific in 1906. Mr. Spence was promoted to assistant director of traffic of the Southern Pacific at Chicago, in January, 1911, being further promoted to director of traffic of that company and the Union Pacific at New York, in the following year. In February, 1913, when the Southern Pacific-Union Pacific merger was dissolved, he was appointed director of traffic of the Southern Pacific, with headquarters at New York. Mr. Spence was appointed executive officer of the Southern Pacific in April, 1925, retiring from this position in December, 1928.

L. F. Newton, superintendent of the Tacoma division of the Northern Pacific, with headquarters at Tacoma, Wash., who died of a heart attack on November 1, at Yakima, Wash., was born on October 10, 1876. He entered the service of the Northern Pacific on October 14, 1893, as an operator and agent, serving at various points in this capacity until June, 1897. He was then advanced to train dispatcher at Duluth, Minn., serving in this capacity and as assistant chief dispatcher and assistant trainmaster until October 25, 1909, when he was promoted to trainmaster, with headquarters at Duluth. After serving in this capacity on various divisions, Mr. Newton was further advanced to assistant to the general superintendent at Tacoma, on May 10, 1916. During the war he served with the United States Railroad Administration, returning to the service of the Northern Pacific on March 1, 1920, as assistant to the general superintendent at Tacoma. On January 1, 1926, he was appointed superintendent of the Pasco division at Pasco, Wash., being transferred to the Tacoma division on January 1, 1932, where he was located at the time of his death.

Colonel William A. Colston, vice-president in charge of corporate relations of the New York, Chicago & St. Louis, died on November 6, as reported in the *Railway Age* of November 10, in which issue a detailed sketch of his career was

Col. W. A. Colston

given. Colonel Colston entered railway service in 1891 with the Louisville & Nashville, where he served for many years in the accounting department, later being transferred to the law department of the same road. He resigned as general solicitor for the L. & N. in 1920 to become director of finance for the I.C.C. and in 1922 he was appointed vice-president and general counsel of the Nickel Plate.

Ivy L. Lee, public relations counsel for many large corporations, including the Pennsylvania Railroad, died at St. Luke's hospital in New York on November 9. Death was attributed to a brain tumor. Mr. Lee was born at Cedartown, Ga., on July 16, 1877. He attended Emory College, Oxford, Ga., and later entered Princeton University, from which he graduated in 1898. He subsequently engaged in post-graduate work at Harvard and Columbia Universities. Mr. Lee began his career as a newspaper reporter. In 1903 he became publicity manager for the Citizen's Union, and in 1905 he began his public relations work as representative for various an-

Wide World

Ivy L. Lee

thracite coal operators, the Pennsylvania Railroad and other corporations. From 1910 to 1912 Mr. Lee was engaged in various occupations in Europe, returning to the United States on the latter date as executive assistant on the Pennsylvania. In 1914 Mr. Lee became associated with John D. Rockefeller, Jr., and from January, 1915, to April, 1916, he served as a member of his personal staff. Mr. Lee established an office in New York City in 1916 and has since that time been engaged as adviser in public relations for the Pennsylvania Railroad and numerous industrial corporations, banks and other business and philanthropic institutions.

Sir Donald Mann, prominent Canadian railroad builder and financier, died suddenly at his home in Toronto, Ont., on November 11. Mr. Mann was born at Acton, Ont., on March 23, 1853. After several years of farming, he entered the lumbering business, becoming foreman of a lumbering company at the age of 21. In 1879 Mr. Mann went to Winnipeg and the following year he became a contractor in connection with the building of the Canadian Pacific. Six years later he participated in the organization of the firm of Mackenzie & Mann, which latter concern in succeeding years constructed the Edmonton, Qu'Appelle, the Long Lake and the Saskatchewan railways. About this time Sir Donald purchased a charter for the system known as the Lake Manitoba Railway, which later was merged into the Canadian Northern (now a part of the Canadian National). In 1909 Sir Donald and his partner secured bond guarantees from the governments of Alberta and Saskatchewan for building branch lines in those provinces and also negotiated an agreement with the British Columbia government for a guarantee of Canadian Northern funds to complete the line from Yellowhead Pass to Vancouver. Sir Donald disposed of his extensive railway interests several years ago and has since that time resided in Toronto.

LIGHT-WEIGHT RAILROAD EQUIPMENT IS AN ECONOMIC NECESSITY

WHY BUDD BUILDS IT OF STAINLESS STEEL

•

For four years the Edward G. Budd Manufacturing Company has pioneered in the fabrication of light-weight, high-speed railroad equipment. It has tested all sorts of materials . . . compared them from all angles. And it chose stainless steel because stainless steel ***alone*** has all those qualities which make possible light-weight, high-speed railroad equipment without sacrifice of safety.

Budd builds cars and whole trains of stainless steel because it gives:

STRENGTH—Stainless steel is four times as strong as ordinary steel and twice as strong as those alloys of steel which are offered by many as a substitute. Besides, it is not merely corrosion resistant—it is corrosion proof. Since light weight is made possible by the use of thin sections, it is essential that the metal in these sections be continually dependable.

WORKABILITY—Through the exclusive Budd "SHOTWELD" process of construction, stainless steel can be welded so that each car becomes virtually one piece of steel. There are no rivets—no bolts—to loosen or break.

LOWER MAINTENANCE COST—Cars of stainless steel need not be painted and re-painted. An occasional washing preserves the shimmering beauty of the metal.

LOWER ULTIMATE COST—The light weight obtainable with stainless steel permits a substantial reduction in horse-power. Of course stainless steel is more costly than inferior alloys, but this wise investment is more than offset by the lower cost of the smaller and more economical power plant.

•

SPEED WITH SAFETY

EDW. G. BUDD MANUFACTURING COMPANY

PHILADELPHIA

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HIGH COSTS

FOR HEATING COACHES

STEAM Heat Connection leaks between passenger cars, which waste fuel and time and detract from the appearance of your train, can be stopped by using BARCO Metallic Steam Heat Connections.

Frequent repairs on line of road and at terminals, which cause delays and high maintenance cost, can be stopped by using BARCO Metallic Car Steam Heat Connections.

Steel forged top threaded end with hardened steel metal wearing parts and BARCO gaskets that will last a steam heat season without leaking, together with freedom from 90 degree bends and full capacity, assure satisfactory service from BARCO connections with the lowest possible cost of maintenance.

BARCO connections applied now will pay big returns and substantially reduce your steam heat troubles during this winter.

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THE HOLDEN CO., LTD.
In Canada
Montreal—Moncton—Toronto
In Canada
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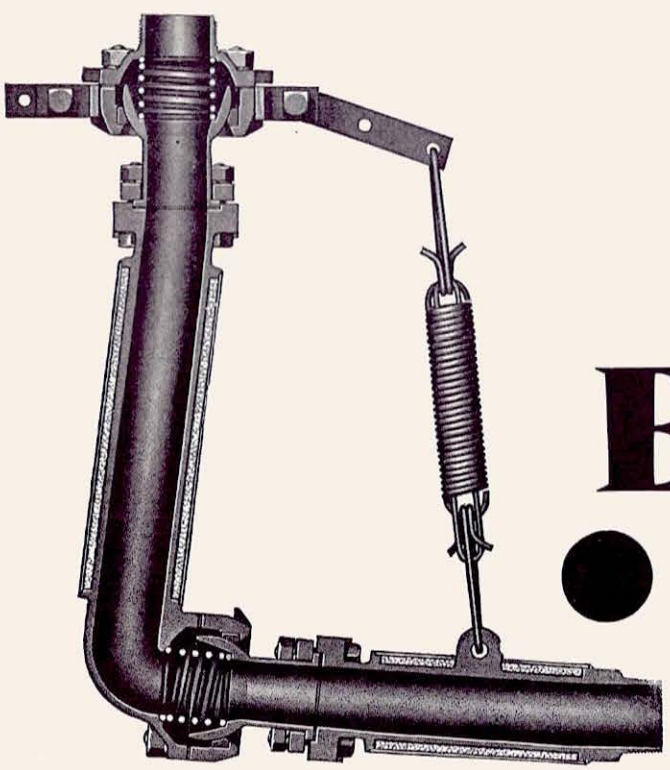


BARCO

FLANGED TYPE

STEAM HEAT CONNECTIONS

Consistently Positive Operation—Long or Short Trains

Signals Always Distinct—No Interference Nor Overlapping

Wear Does Not Affect Consistent Operation

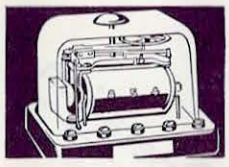
Maintenance Costs are Very Low

A SUPERIOR SIGNAL VALVE

WESTINGHOUSE AIR BRAKE COMPANY

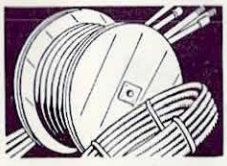
General Office and Works, WILMERDING, PA.

A recovery check list for railroads



✓ *Train Dispatching Equipment* . . . Check up on your train dispatching equipment. Bring it up to date with a new Western Electric selector key . . . jack box . . . selector . . . loudspeaker.

✓ *Motors and Control* . . . Turn to Graybar for dependable, standard motors and control. Meet any motor need quickly and conveniently from a Graybar warehouse.



✓ *Wire and Cable* . . . For vital circuits—dependable wire and cable from Graybar. All kinds—including Western Electric Lead Covered Cable.

✓ *Line Construction Materials* . . . Pole line construction materials may be ordered, shipped, and assembled economically and conveniently from Graybar.

✓ *Lamps and Lighting* . . . A complete selection of quality lamps, fixtures and glassware is readily available from Graybar. Meets exacting railroad needs.

✓ *Underground Materials* . . . Graybar is the logical source of every type of conduit for railroad use—also conduit fittings, tools, transformers, accessories.

GRAYBAR QUALITY Since 1869

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GRAYBAR ELECTRIC COMPANY

OFFICES IN 74 PRINCIPAL CITIES. EXECUTIVE OFFICES, GRAYBAR BLDG., NEW YORK, N. Y.

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Journal Bearings

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AMERICAN STEEL SHEETS

FOR ALL KNOWN USES

KEYSTONE COPPER STEEL — AMERICAN SHEET AND TIN PLATE COMPANY — PITTSBURGH

In the Railway Field

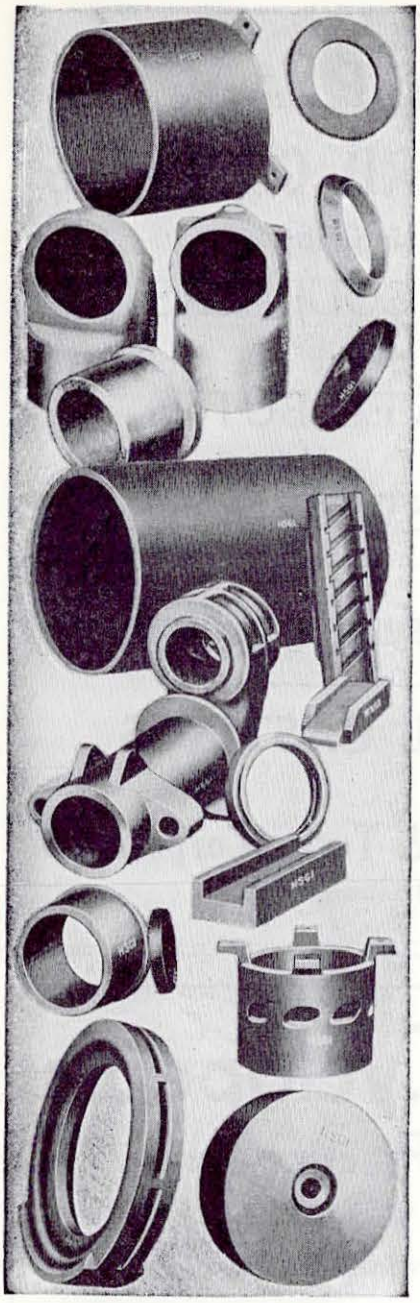
For car roofing, shops, sheds and other buildings, general sheet metal work, culverts, tanks, and flumes, Keystone Copper Steel *gives maximum rust resistance.*

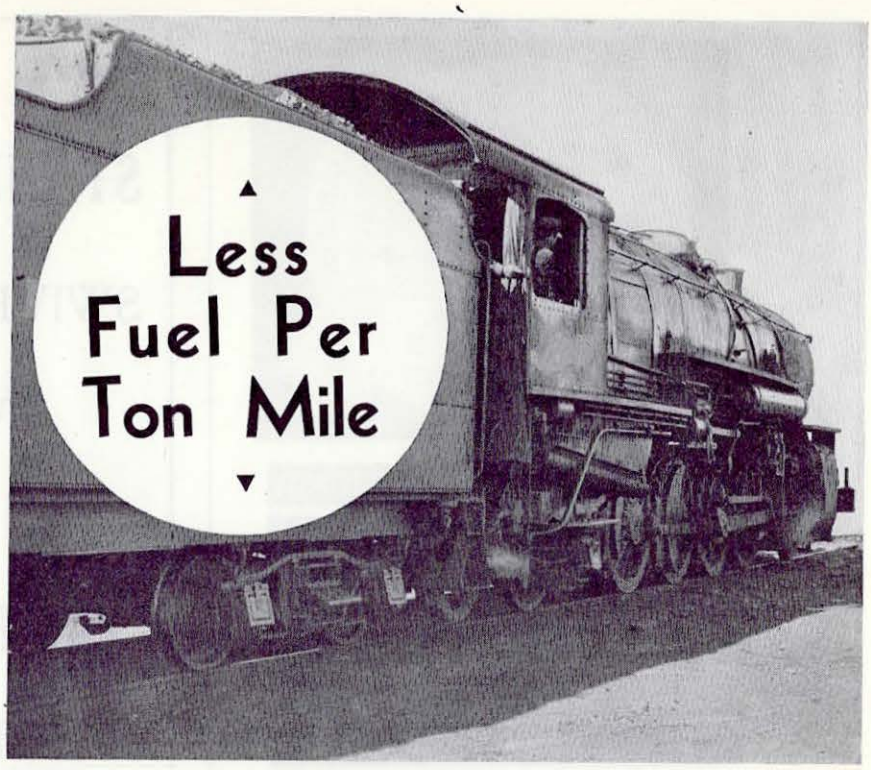
Insist upon AMERICAN Black Sheets, Keystone Rust Resisting Copper Steel Sheets, Apollo Best Bloom Galvanized Sheets, Galvannealed Sheets, Heavy-Coated Galvanized Sheets, Formed Roofing and Siding Products, Tin Plates, Terne Plates, Black Plate, Etc.

Write us relative to your sheet steel requirements. This Company also manufactures U S S STAINLESS and Heat Resisting Steel Sheets and Light Plates for all purposes.

AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa.

SUBSIDIARY of UNITED STATES STEEL CORPORATION





ELIMINATION of valve and cylinder blows is one of the most important of all fuel conservation problems.

Many railroads have solved this problem by specifying valve and cylinder wearing parts made of HUNT-SPILLER *Air Furnace* GUN IRON.

Comparison of fuel records has proved to these railroads that the locomotives equipped with HUNT-SPILLER *Air Furnace* GUN IRON parts require less fuel per ton mile.

HSGI
Reg. U. S. Trade Mark
Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings
Parts Finished For Application
Dunbar Sectional Type Packing
Duplex Sectional Type Packing for Cylinders and Valves
(Duplex Springs for Above Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

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HUNT-SPILLER *Air Furnace* GUN IRON

THE CAREFUL INVESTOR JUDGES A SECURITY
BY THE HISTORY OF ITS PERFORMANCE

KERITE

IN THREE-QUARTERS OF A CENTURY OF
CONTINUOUS PRODUCTION HAS ESTABLISHED
A RECORD OF PERFORMANCE
THAT IS UNEQUALLED IN THE HISTORY OF
INSULATED WIRES AND CABLES

THE KERITE INSULATED WIRE & CABLE COMPANY INC
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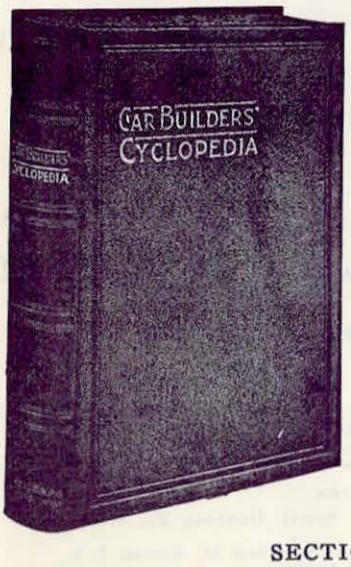

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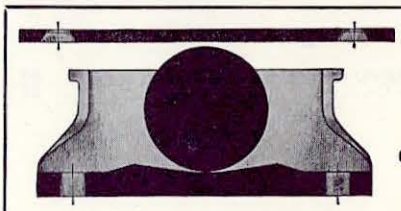

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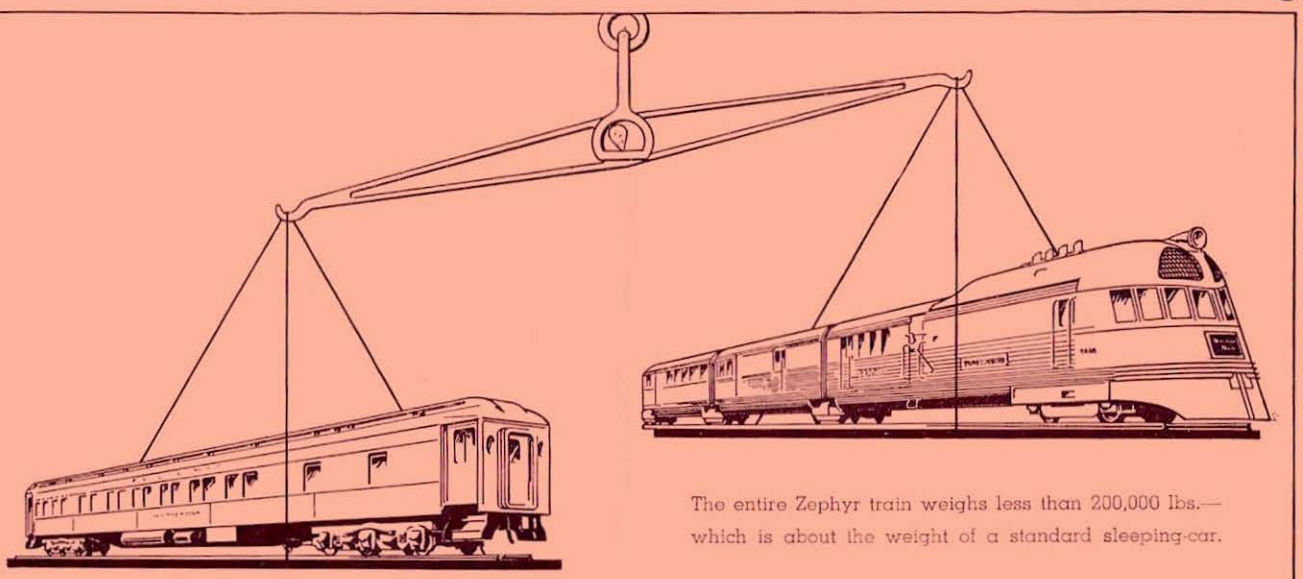

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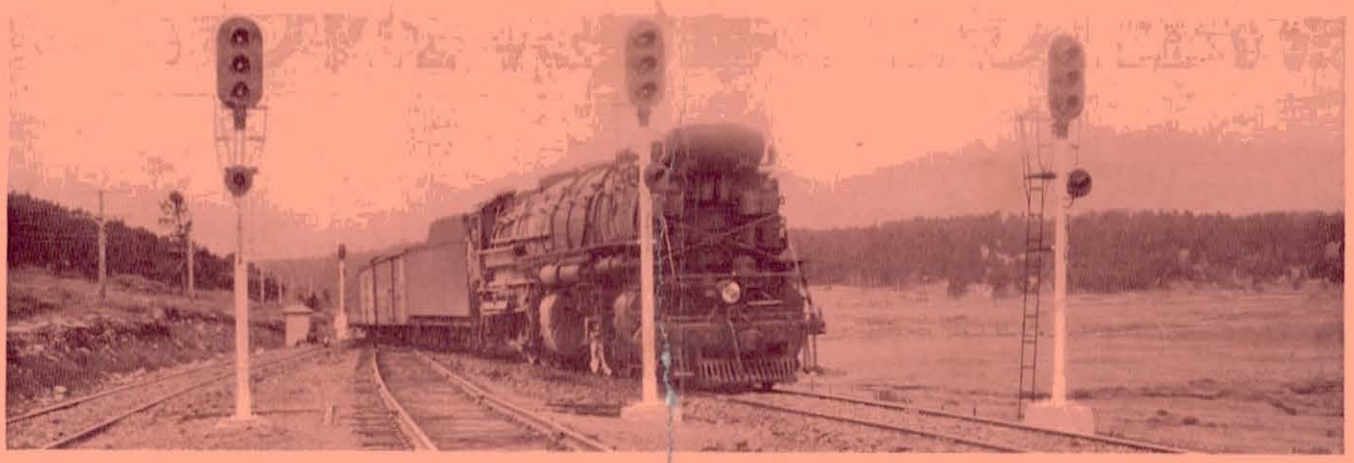

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